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American Aviation

The Independent Voice of American Aeronautics **APRIL 15, 1945**

The Pot Begins to Boil

For Nightly Review

AS AN escapist refuge from a war-torn world there are few spots to rival Mexico. And both as an escapist from the realities of aviation, and as an open door of opportunity for future development, Mexico is a strange intermingling of contradictions and potentials.

Long before the war is over, Mexico has become a hotbed of aviation expansion which many would find poignantly reminiscent of the harem-scarem aviation expansion in the United States in the late twenties.

Mexico's aviation will bear close watching. What happens there affects the U. S. both directly and indirectly. It also has a vital bearing on Central and South America. It is Postwar Example No. 1—before the postwar period begins.

In the form of government permits and concessions Mexico has more airline route miles operating and on paper per capita than any country in the world. New permits are being granted all the time. Yet the mere route mileage doesn't mean a great deal at this time. Transport equipment is limited. Much of it is old and small. Many route miles are merely contemplated awaiting availability of equipment. But the day of available airplanes is fast approaching—and then the pot will begin to boil in earnest.

Mexico is now beginning to go through a period of hectic expansion similar in many respects to that experienced in the United States prior to the air mail cancellations. As in the United States, economics and politics will play the leading roles in determining the survival of the fittest and/or strongest. Money will be made and lost.

(Turn to page 9)

Bell Vice President

D. Roy Shoults, formerly engineer of General Electric's Aviation Division, and one of the men principally engaged in the development of jet engines in this country, has joined Bell Aircraft Corp. as vice president of sales.

Late Bulletins

Discounts Withdrawn

The domestic airlines have withdrawn their proposed five percent discount tariffs on the air travel card plan and government travel. CAB sources indicated that this would make no difference in the Board's plan to hold a hearing on the discount plan.

AFL Decision Awaited

A committee vote on the McCarran All American Flag Line bill in the Senate may not be reached until late in May. Due to Chairman Josiah W. Bailey's determination to hear all witnesses. The American Federation of Labor has indicated it will not be able to testify until it reaches a decision on this policy question which will be sometime after May 15.

Trend of the News

Off Political Hot Seat: Biggest current headache in the aircraft industry is the recent move by Under-Secretary of War Patterson to convert all cost plus fixed fee contracts to fixed price contracts. The job is virtually impossible in some instances. While it isn't certain yet how far the War Department will go in pushing the conversion, industry is getting weary of trying to point out that CPFF contracts result almost always in lower costs to Government. But public and Congress have been suspicious that CPFF contracts are more costly to taxpayers and the War Department may be trying to get off the political hot seat. At this stage of the war a conversion of contracts hardly makes sense.

Mead Report Coming: The aircraft industry and the Army Air Forces will have an opportunity to present their up-to-date story to Congress and the public through the medium of the annual report of the Senate's Committee for Investigation of the War Effort. Formerly the Truman Committee, this group is now headed by Sen. James M. Mead (D., N. Y.). Preparation of the report has been started and all manufacturers of military aircraft have been invited to give the Committee their production statistics for the past year. Material for the combat phase of the report will be obtained from the AAF.

Use of Leftovers: A relatively small proportion of material used by the aircraft industry in wartime can be utilized for peacetime production, it now appears. Thus the Government surplus warehouses will have to seek non-aircraft outlets for the bulk of the items. Most postwar designs will call for new high-strength aluminum alloys, other metallic alloys, and advanced equipment design. of which no appreciable quantity is in current wartime production use. Probably not more than one or two percent of leftover aluminum will find its way into postwar planes.

New Fast Transport: Republic Aviation Corp. has designed what it describes as one of the world's fastest transports for postwar production, which confirms reports that have circulated in the industry for some time. No details of the plane have been revealed by the Farmingdale, L. I., company. Republic says there is nothing to the rumor that it is entering the feeder line plane field, at least "not at this time."

(Turn to page 6)

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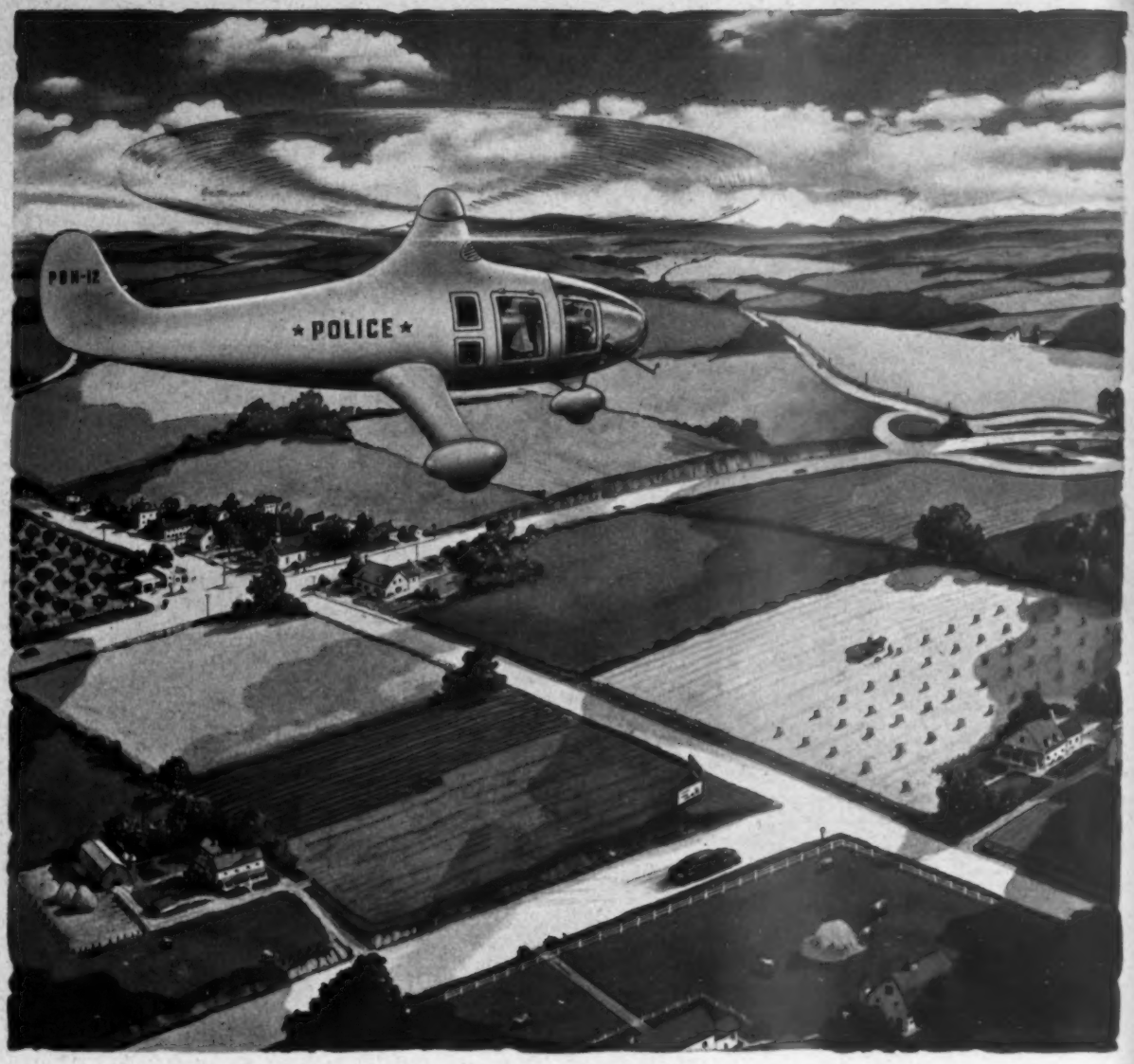

Calling all Helicopters

"Calling all helicopters," may be expected to supplement the familiar phrase "calling all cars," *postwar*. For the helicopter is ideally suited to police patrol, traffic, and transportation needs.

Used for aerial reconnaissance, it can quickly spot and overtake fleeing criminals on highways. And, when equipped with necessary armament and loud-speaker equipment, it could if necessary, cope with such criminals, without other police assistance.

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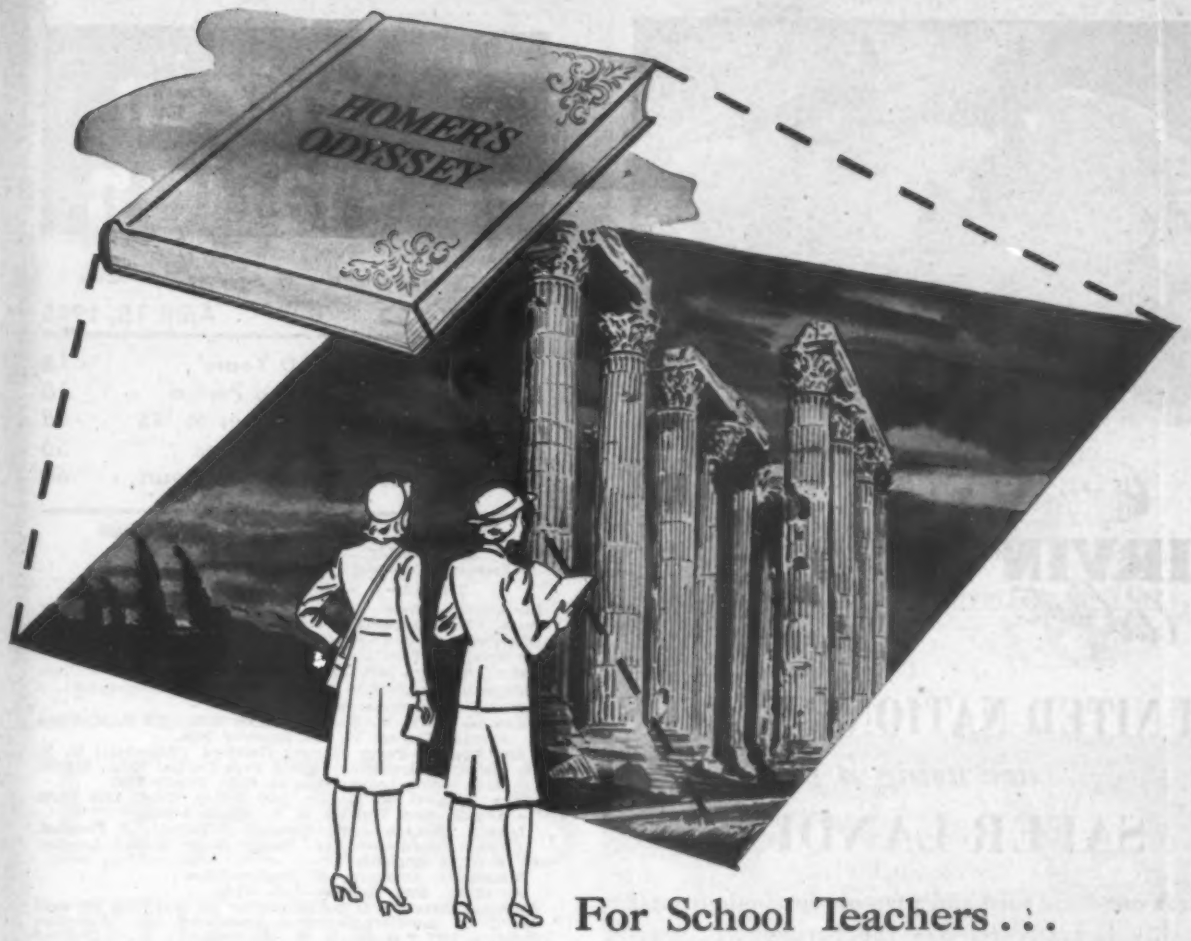

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Herein lies the future importance to American education of the 100-and 200-passenger, 300-mile-an-hour, post-war Clippers recently ordered by Pan American World Airways. Educators, travelling aboard these Clippers at new, low rates, will *know* the world, as well as what has been written about it . . . They will have *seen* the world as well as having read about it . . . *The printed page will come alive!*

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American Aviation

The Independent Voice of American Aeronautics

Vol. 8 No. 22 April 15, 1945

'All Engines Jet in 10 Years' 15
Mexico Faces Expansion Period 16
Airlines Expect New Planes in '45 . . 18
Service Operators vs. Airlines 56
UAL Takes CAB Decision to Court . . 60

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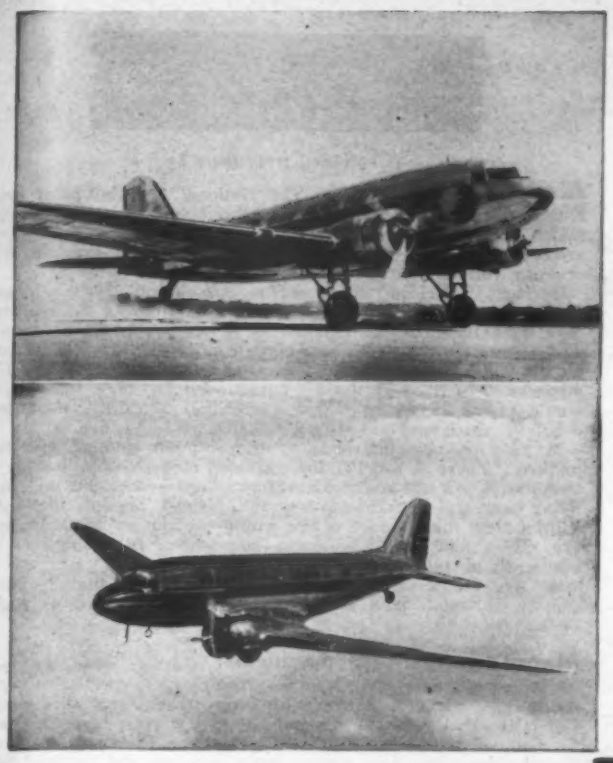

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Trends

(Continued from page 1)

Airparks and Realtors: The National Association of Real Estate Boards is not enthusiastic about the various proposals which have been advanced for airparks in suburban residential areas, and it is apparent that the aviation industry may find increasing resistance to such plans from this source.

Herbert U. Nelson, editor of the Association's weekly organ and generally considered the national spokesman of the realtors, says it has been determined that it would not be at all agreeable to city residents to live near a commuting airpark because of the noise. He also contends that the space necessary for airparks—which could not be surrounded by high buildings—would prove a barrier to decentralization of thickly populated urban areas.

Mr. Nelson also interjects another human element into the picture. "There is a belief that millions of persons will want to live perhaps a 100 miles away from their work and will like flying back and forth," he points out. "Isn't it possible that after a brief time this manner of life would become an actual drudgery? Even now it is a boresome task getting back and forth to our work on modern suburban traction lines."

At any rate, airpark planners are going to want the co-operation of real estate men, and a thorough exchange of views might be helpful.

Manufacturers and Surpluses: Getting down to cases on the problems of surplus disposal which are expected to begin multiplying rapidly in the near future, the Surplus Advisory Committee for the eastern region of the Aircraft Manufacturers Council of the Aeronautical Chamber of Commerce met in Washington a few days ago to begin debating and drafting final recommendations. This committee is headed by H. M. Horner, president of United Aircraft Corp., and is composed of senior executives.

The committee has divided the problem into four main categories: plant facilities; airframes, including separate programs for light-planes and heavy craft; engines and propellers; instruments, accessories and other components. The committee hopes to forestall many problems by being ready for them before the big rush in surpluses comes.

The western region of the Manufacturers Council also is activating a similar committee to work with the eastern group. These committees, said Horner, reflect "the industry's recognition that the problem of disposing of surplus aircraft, engines, and components is of major national concern in view of its effect upon prospects for postwar employment and national defense."

CMP to be Discontinued: Aircraft manufacturers were definitely told by OWM Director James E. Byrnes that simplified controls over materials can be expected after the defeat of Germany. In his quarterly report, made public just before his resignation, Byrnes pointed out:

"The WPB proposes to discontinue the Controlled Materials Plan as quickly as it is no longer needed to protect military and essential civilian production. It should be possible to substitute a simple priorities plan for the Controlled Materials Plan in the quarter following VE-Day with CMP orders on the mills, in effect, continuing for an additional quarter."

However, Byrnes indicated that the present AAA priority band, and the directive system will be retained to break bottlenecks. WPB, he said, will revoke as rapidly as is consistent with the remaining war production the L and M and other restrictive orders, as resources and materials are freed.

Seeding from Planes: Thousands of acres in the southwestern United States already have been seeded with native grasses from planes. The International Seed Pellet Co., San Diego, Cal., formed by Dr. Lytle S. Adams, using two Bellancas now is seeding 10,000 acres on the large King ranch, Kingsville, Texas. The bill (H.R. 1392) introduced by Rep. J. Hardin Peterson (D., Fla.), chairman of the House Public Lands Committee, which would provide two million dollars for seeding public lands, is under consideration in Congress. Reports on it have been requested from the Department of the Interior and the Department of Agriculture. The aerial seeding company is attempting to obtain larger planes, as the Bellancas have to be landed too frequently for reloading. The possibilities of Fairchild's C-82 for seeding purposes are being investigated.

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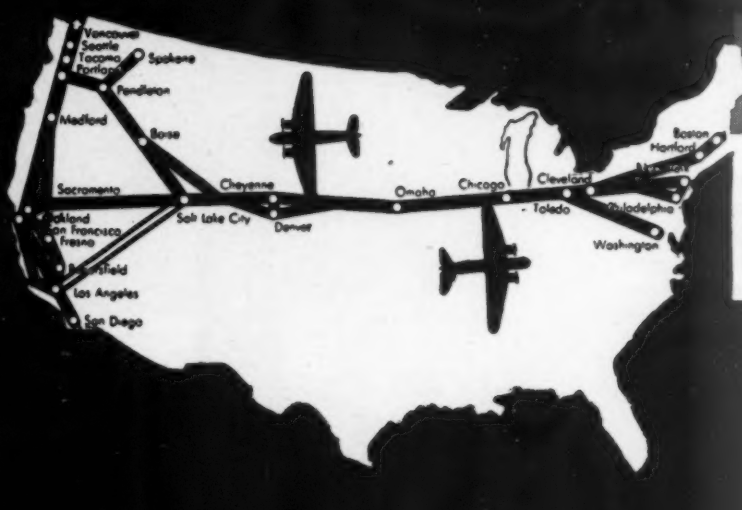
FIRST AROUND THE WORLD — FIRST THE WORLD OVER

Phillips



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(Continued from page 1)

Most challenging factor in the maneuvering for position is the fact that the bulk of air mileage is operated today, or about to be operated, by companies that are either owned outright or are controlled by American capital. This can be dynamite. Or it can lead to the healthy development of many air services that are vitally needed by Mexico.

There is much to be found on the credit side of the ledger in Mexico's aviation outlook.

The first is that Mexico is one of the most natural fields of development for the airplane to be found anywhere in the world. Surface transportation is either painfully slow or non-existent. Anybody with an airplane today can fill it up with passengers. The traffic is available from almost anywhere to almost anywhere. Mexicans like to fly. As in most Latin American countries the standard of living for the bulk of the people is quite low—but the money is always found somewhere for transportation. In most of Mexico the airplane can stand on its own without regard to competing ground transportation. In some productive parts of the country the airplane isn't merely a better means of travel—it is virtually the only means.

A second credit factor is the tourist potential. Mexico offers year-round attractions which are drawing increasing numbers of people from the north. The tourist outlook is not only permanent but is very bright, restricted only by the hotel and other accommodations. Trunk route airlines now have, and will have, ample tourist business. Mexico will benefit materially from the European war. As a winter resort, Mexico will benefit in common with the entire Central American and Caribbean area, for America's winter playground postwar-wise will move south from lukewarm Florida.

A third, and very important, credit factor is the movement of U. S. industrial and merchandizing capital and enterprise into Mexico. At least for the present Mexico seems to welcome U. S. capital that is intended for development and not for exploitation. This holds true for aviation. Mexico can benefit from U. S. aviation capital in the same manner that the U. S. benefitted from foreign capital in its transportation and industrial expansion in the early days. But Mexico will have to exercise judgment and to know when to apply the brakes.

On the debit side is the fact that Mexico is no place for aviation amateurs. In the process of getting burned and losing their money, the amateurs (and there are several groups of U. S. interests who are strictly amateurs in the airline business) will probably muddy the already-turbulent waters. It costs real money and it takes real experience to operate an airline successfully. A permit and a surplus airplane hardly constitute an airline. The Mexican Government hasn't enough experience as yet in air transportation to distinguish always between the good and the bad.

Another debit factor is the lack of government aid. Neither the federal government nor the local state and municipal governments have money for airports, radio and other facilities. Even the airport at Mexico City, one of the busiest and most important in the western hemisphere, is inadequate for heavy-gross airplanes and is not even now equipped for night landings. Each airline must install its own facilities and as a consequence the bulk of Mexican operations have been from cow pastures that are airports in name only. The first really modern and adequate airport built by private airline funds in Mexico was provided a few years ago at Monterrey by American Airlines. United is building several excellent airports with its own money. The U. S. War Department furnished funds for a series of excellent fields built by Pan American under a war program in eastern and southeastern Mexico. But a surfaced runway is a rarity aside from these few exceptions.

A third debit factor is the desire of the Mexicans for first-class air services without the proper conception of what it costs to obtain such services. Every community wants DC-3's to serve its airfield, but doesn't appreciate the costs involved. Mexicans generally want things done over-night. One can't blame them for being tired of the barnstorming type of flying with obsolete equipment which has characterized much of Mexico's operations to date, but they need a clearer understanding and comprehension of what constitutes a first-class airline.

Mexico's aviation is, in a large sense, a U. S. air battle in Mexico's airspace. The grand-daddy of all of the airlines in Mexico is Pan American Airways with its two lusty domestic affiliates, one of which is a direct associate and the other, Aeronaves, in which it owns about 40% interest. The PAA empire is largest in size and by all odds the best entrenched. Had PAA devoted more attention to its Mexican enterprise and invested more money in airfields, radio and airplanes, it would have been in a stronger position than it now finds itself. It is not likely to lose much or anything for the time being, but it will have real competition. The advantages should all be with PAA, but in reality it is more vulnerable to competition than one should have expected.

The challengers are of three kinds. The amateur newcomers won't worry anyone except for the turbulence caused politically and the damaging effect they may have on U. S. prestige in general. The strictly international operators (American Airlines and the probable new carrier from Los Angeles to Mexico City which is expected to be Western Air Lines) will take shares of PAA's international traffic and American has already done so. But the biggest challenge is in the domestic field where United Air Lines, through its directly-owned LAMSA system, and Aerovias Braniff, Tom E. Braniff's Mexican company, are playing for big stakes. United's sincere and constructive effort to get a foot-hold is being backed by the kind of cold cash designed to make friends—in good hard-surfaced airports, in good shop facilities and in radio and other ground installations. Braniff plans to do likewise.

Other U. S. challengers are Eastern and TWA. Whether Eastern is successful in getting a direct cut-off international route to Mexico City in the pending route case is a question at this moment, but in the long run Eastern probably will fly to Mexico City if it wants to. TWA is already in the Mexican picture, having come in

quietly from the south by means of the TACA system which it manages and in which it has a substantial interest. And Chicago and Southern Air Lines has not given up hopes of getting into Mexico from Houston.

One development designed to coordinate airline activity in a cooperative and constructive way is the formation of a Mexican company of Aeronautical Radio, Inc., a joint airline organization which smart and experienced Del Rentzel has completed to handle all aviation radio matters for all airlines in Mexico. This will bring to Mexico the same high type and efficient communications set-up which the airlines of the United States have enjoyed for many years.

Mexico is being surfeited with U. S. aviation. It is being faced with a problem without precedent or parallel in aviation history in the world. Without proper regulation and government brakes, Mexico may become saturated beyond its ability to absorb. On the other hand there are a few signs that Mexico is aware of its responsibilities and will exercise proper judgment in protecting its own purely Mexican aviation interests and utilizing the best that the U. S. has to offer. In any event, a close working cooperation between the Mexican Government and our own U. S. aviation officials (CAB and CAA) could not help but be of benefit to Mexico. Postwar Example No. 1 will be well worth watching.

Committee With Promise

ANYONE who has lived in Washington during the past dozen years is rightfully skeptical of so-called advisory committees appointed to aid government agencies. Very few such committees have ever amounted to much. In recent years many business men have been "burned" by being invited to act as advisers to government departments only to find that their names have been used for publicity purposes while policies contrary to their thinking and views have been adopted. There was even an aviation advisory committee to the Department of Commerce which faded into history after the first political publicity announcement.

But the new Non-Scheduled Flying Advisory Committee which CAA Administrator T. P. Wright appointed recently shows real signs of achievement. In the first place there was a sincerity of purpose behind the organization of the committee. In the second place much time and thought went into selecting a truly represenative group of responsible aviation people. The recent four-day meeting of the committee in Washington was highly productive. It would seem that here is a real demonstration of cooperation by a government agency with the people it serves. The selection as chairman of able Arthur I. Boreman of Des Moines, a neutral and a constructive aviation influence in the mid-west, is typical of the high plane on which the whole project has operated in its brief history.

The committee deserves the wholehearted cooperation of everyone interested in the sound development of non-scheduled aviation. Along with everyone else we wish the committee godspeed on an important mission for the advancement of civil aviation.

The Surplus Airplane Mess

JUST ABOUT every hope that the Reconstruction Finance Corporation's methods of disposing of surplus airplanes could be modified into something constructive and beneficial to civil aviation has now vanished.

From coast to coast there is a unanimity of opinion among aviation people that the RFC's policy of absurdly high price tags on these surplus airplanes is going to injure postwar civil flying to a substantial degree. The surplus plane problem is a real headache at best. The RFC is limited by law as to what it can do. But it doesn't have to be as deliberately contrary to the laws of common sense as its present policy happens to be.

Airplanes are not jeeps or cooking utensils or raw materials or radios. Airplanes can rarely be sold direct to the consumer, even when new, without a boomerang to the market. The only proper method of disposal of surplus airplanes is through the medium of dealers and distributors whose business it is to buy and sell airplanes. Under present prices, the local operator cannot buy the surplus planes and put them in airworthy condition to sell at a profit. Yet the consumer who is buying the present planes at ridiculously inflated prices is going to get disgusted with airplane ownership because of the high repair, overhaul and maintenance costs, or is going to fly unairworthy airplanes with resultant unfortunate consequences.

The RFC policy is going far to ruin the civilian business after the war. The customer who would purchase a useable new airplane after the war will be "all through" the flying business by his costly experiences with high-priced surplus airplanes which do not come within a wide margin of meeting his actual requirements.

The present disposal policy is going to boomerang. A halt to all sales should be called now before further damage is done. Whatever high prices are being exacted in the name of the taxpayer are going out the window in RFC overhead, and the taxpayer will lose further in a depreciated and reduced market for good postwar airplanes when the need for new industry comes after the war.

WAYNE W. PARRISH.

Letters

Doubts Canadian Policy

Toronto 3, Ontario, Canada,
March 20, 1945.

To the Editor:

I was very surprised to read an article by Austin P. Cross in the March 15 issue telling us that now that Canada has several routes authorized into the United States, she (Canada) will be glad to allow U. S. carriers to operate them temporarily and which may mean, to use Cross's words, "a long time."

May I be so bold as to ask where Mr. Cross gets his information? It seems unlikely that TCA will allow an American company to directly run a route belonging to a Canadian line when indeed, she won't even let a Canadian company compete, on any large scale, with her in Canada. I say TCA here because after all, TCA is the government as far as airlines are concerned in Canada. The lack of equipment is no excuse for this statement of Mr. Cross's, because as we'll all see, the planes will be there when the route is to be opened. They always have been.

Don't get me wrong though, AMERICAN AVIATION is still THE magazine in its field.

Yours very truly,
RONALD G. BELL

Pilot in, Walking Army

Rochester, N. Y.
April 1, 1945

To the Editor:

Maybe we should title this letter "The Poor Airline Pilot."

Your recent articles in *American Aviation* in regard to the impending shortage of qualified airline pilots, led me to drop you a letter and show you one of the reasons for same.

Since last July, 1944, I have been classified as 1-A in the draft. This coming week I am being drafted as a private in Uncle Sam's walking army. There is no story to this procedure as it is going on every day

UNITED
AIR LINES

BAY STATE TO GOLDEN GATE . . . IT'S THE MAIN LINE AIRWAY

Traditionally industrious New England, busy "workshop" of the Atlantic seaboard, a national leader in per capita buying income, a peacetime mecca for seashore and mountain vacationists—only overnight from the whole Pacific Coast on United's straight, strategic route. Serving 43 cities across the nation, the Main Line Airway goes where business is.

<— Boston, looking down on Tremont Street, a corner of Boston Commons and Old Park Street Church.

in every town and village all over the country. This cannot be helped.

But the drafting of qualified airline pilots should be stopped or your recent articles on this subject of pilot shortages will become a reality. I myself will have to take the best that the United States Army can offer me as a foot soldier. Even though I have been flying for over 11 years and have been connected with airline flying over five years, the local draft board believes that I can do a better job for the war effort as a foot soldier than as an airline pilot.

In 1944 when the private flying school operators saw their flight instructors being drafted in the walking army, they saw that a lot of good valuable material was going to be wasted and therefore took steps to prevent this sort of a thing. This resulted in most of the men being given a chance to fly for the Army.

In 1941 when we had Pearl Harbor, the U. S. Army was very short of qualified transport pilots to haul its cargo to the different parts of the world. Who did they call on to do the job? Of course, the airline pilot.

A lot of the airline pilots wanted to leave their airlines and join but they received letters from Washington Army officials through the Air Transport Association that we were needed more on the line than in the services. So we stuck it out. In June, 1944, the Army Air Forces called in all of the Army planes in the services of the airlines in the U. S. Of course, for a short while this left some surplus airline pilots idle until more equipment could be had. Then again a lot of airline pilots offered their services to the Army but what did they tell us? Existing regulations do not permit us to take in any more pilots into the armed forces. We already have too many.

Does this not seem strange to you that the Army Air Forces could not find some kind of flying for pilots who have the best training that can be had? Does it not seem as though the Army Air Forces are wasting money when they take, and are still taking, 17-year-old boys and teaching them how to fly? Teaching these 17-year-old boys the art of flying costs into the thousands. Why then must the Army insist that they cannot use a pilot with 11 years experience who is qualified to fly the biggest planes that the Army can offer? This is wrong and something should be done about it.

If the draft boards still see fit to place the airline pilots in the walking Army, they will continue to have a pilot shortage from now on. I only hope that this letter is read by someone in the higher-up offices in Washington and that a stop will be put to it. Or it won't be long before the infantry of the U. S. Army will be full of qualified airline pilots.

ROBERT C. CANSDALE.

Books

FIGHTERS UP. By Eric Friedheim & Samuel W. Taylor. Edited by Arthur Gordon. 275 pp. Illustrations. $2.50. McRae-Smith Co. Philadelphia.

"The Story of American Fighter Pilots in the Battle of Europe" is exciting reporting of fighter squadrons, their missions and their aces in the Eighth and Ninth Air Forces stationed in England. The incidents begin with a typical mission in November, 1943, of Thunderbolt pilots from "Zemke's Station", continue through a photographic reconnaissance mission, a few hours at the Air-Sea Rescue headquarters, another day at Eighth Air Force Headquarters concluding with "The Main Event"—fighter action on D-Day. Pictures of the planes, aces, stations and activities of the fighter commands complete the story of "Fighters Up".

ASTRONOMICAL NAVIGATION WITHOUT MATHEMATICS. By A. L. Mieville. 25 pp. 65c. The MacMillan Co., New York.

This book is an illustrated simple explanation of star navigation with nothing other than a star chart, sextant and chronometer. The author makes no claim to originating the system, but states that its simplicity recommends it for the student navigator. Matters which might obscure the argument are avoided, as for example, no reference is made to corrections. Nevertheless, this book should prove a good starting point for the private flyer who wants to get a fundamental concept of astronomical navigation.

PHOTOGRAPHIC SURVEYING. By Col. B. B. Talley and Paul H. Robbins. 232 pp. Pittman Publishing Co., New York. $3.

Two members of the American Society of Photogrammetry, have written this textbook on aerial and terrestrial photogrammetry, illustrated by numerous diagrams and photographs. The book is designed either for personal use or college text, and is a detailed study of the whole science of photography and its use, through interpretation, in mapmaking. The authors point out that a knowledge of photogrammetry is essential to modern civil engineering and military science.

THEORY OF FLIGHT. By Richard von Mises. 629 pp. $6.00. McGraw-Hill Book Co., New York.

This is a comprehensive text-book covering all parts of the theory of flight of a plane including wing, propeller, performance and stability. A knowledge of standard college mathematics and some familiarity with general mechanics are presupposed. Three hundred problems, arranged in order of difficulty, are presented for the student to solve.

SPLICING WIRE AND FIBER ROPE. By Raoul Graumont and John Hensel. 114 pp. $2.00. Cornell Maritime Press, New York.

Primarily for seamen, riggers and construction workers, this book has one section devoted to aeronautical splices, including the splicing of aircraft cord and flexible aircraft cable, and served and soldered connections.

Wings of Yesterday

Twenty-five Years Ago

During a railroad tie-up, an Aeromarine Flying Boat, piloted by C. J. Zimmerman, carried 500 copies of the Wall Street Edition of the *New York Evening Post* to Red Bank, N. J., delivering the papers 30 minutes after leaving New York. (April 14, 1920)

At the seaplane races held at Monaco, France, the Grand Prix de Monaco was awarded to Sadi Lecointe. (April 18, 1920).

The San Francisco Aeronautical Exposition was being held in that city, under the auspices of the Manufacturers' aircraft Association. (April 21-28, 1920)

The Pacific Aeronautical Association, at a meeting in San Francisco, urged Congress to establish transcontinental air mail lines, air laws, regulate aviation in general, encourage cities to establish municipal landing fields and to aid development of commercial planes. (April 22, 1920).

Two Navy H. S. 2-Ls, commanded by Lt. Comdr. R. D. Kirkpatrick and Lt. W. R. Cobb, flew from Honolulu to Hilo and back, a distance of 210 miles each way. (April 22, 1920)

Fifteen Years Ago

Jean Mermoz established a seaplane distance record on a closed circuit of 2677 miles, at Marignane, France, flying a Latecoere 28, Hispano-Suiza motored. (April 11-12, 1930)

The Tri-State Aircraft Show was held at Camden, N. J. (April 18-26, 1930).

Col. and Mrs. Charles A. Lindbergh made a one-stop flight from Los Angeles to New York in 14 hours, 45 minutes, 32 seconds elapsed time, or 14 hours, 2 minutes, 27 seconds flying time, establishing an unofficial transcontinental record. (Lockheed Sirius, Pratt & Whitney Wasp motored). (April 20, 1930)

Obituaries

Vincent Bendix

Vincent Bendix, 62, founder of Bendix Aviation Corp. and president of Bendix Helicopters, Inc., died March 27 in New York City. He was an international figure in the field of aviation, was founder and sponsor of the Bendix Transcontinental Air Race and donor of the Bendix Trophy. A glider enthusiast, he was donor of a trophy awarded at the annual soaring competitions at Elmira, N. Y. He was past president of the Society of Automotive Engineers.

Maurice G. McGuire

Maurice G. McGuire, 30, chief test pilot for Ryan Aeronautical Co., was killed March 26 when his craft crashed northeast of San Diego, Cal. He had been a Navy carrier pilot and was with the Flying Tiger combat group in China.

Richard H. Meyer

Richard H. Meyer, assistant operations manager and chief production test pilot of The Glenn L. Martin Co. died March 21 following the crash of a Marauder bomber on a routine test flight. He previously operated the Indianapolis airport.

Alfred Jackson

Alfred Jackson, 39, president of Aeronautical Products, Inc., was killed March 21 when his plane crashed near Kenton, O.

Spencer Jennings

Spencer Jennings, 33, production test pilot for North American Aviation, was killed in a crash near 29 Palms, Cal. March 26.

YOU CAN RELAX *in comfortable seats — 28 in the main cabin and 10 in the forward lounge. Crew of five includes Captain, First Officer, Flight Engineer and two Hostesses.*

For a little extra you can

NOW RIDE IN A STRATOLINER

EASTBOUND		WESTBOUND	
Stratoliner Flight 94		Stratoliner Flight 93	
Effective April 1, 1945.		Effective April 1, 1945.	
lv. San Francisco	7:00 PM	lv. New York . .	11:15 PM
ar. Los Angeles .	8:50	ar. Pittsburgh . .	1:25 AM
ar. Albuquerque	1:50 AM	ar. St. Louis . . .	4:10
ar. Kansas City .	6:50	ar. Kansas City .	5:55
ar. St. Louis . . .	8:35	ar. Albuquerque	9:35
ar. Pittsburgh . .	12:50 PM	ar. Los Angeles .	12:35 PM
ar. New York . .	2:50	ar. San Francisco	3:00

WE are proud to announce that TWA's famous fleet of 4-engine Stratoliners has resumed coast-to-coast commercial flying after 2½ years of overocean military service.

Now completely modernized, the cost of these great planes exceeds $400,000 each. They are, in effect, new planes — faster, more powerful and more comfortable than the Stratoliners you once knew.

The modernization included new wings, landing gear and tail assembly — all exactly the same as used in the latest type B-17G Boeing Flying Fortress. The electrical system is the same as used in the B-29 Superfortress. The new engines are more powerful than ever. However, due to a wartime lack of supercharging equipment, the Stratoliners will be operated at regular altitudes.

With their superior speed and fewer stops the Stratoliners cut nearly 3 hours from TWA's regular transcontinental time.

For this finer, faster and more costly service an extra fare is charged.

The return of the Stratoliners to TWA will help speed essential war transportation and provide more space for passengers, mail and cargo.

Jack Frye *President, TWA*

Don't travel unless your trip helps win the war

TWA
POINTS THE WAY

"MASS PRODUCTION FOR WAR" *was painted by James Sessions at one of Borg-Warner's Norge plants. In peacetime, the great Norge factories at Detroit and Muskegon produce the famed Norge refrigerators, ranges, washers, heating and cooling equipment. Today they are wholly engaged in building war matériel, ranging from intricately fabricated directing devices to such complex assemblies as Oerlikon gun mounts, undercowling for war planes and gun turrets for fighters, bombers and naval craft.*

Someday, when America is again at peace, the nation's industries which have proved so strong in war will produce once more those innumerable other things we have all been doing without.

In this gigantic peace-time job of re-establishing America's high standard of living, Borg-Warner can be depended upon to make significant contributions of far-reaching effect. As in the past, Borg-Warner will produce, and will help industry to produce, products that benefit "almost every American every day."

In the fields of engineering and large scale manufacture, one simple, guiding principle will, as always, direct the efforts of this group of companies: "design it better, make it better."

In production for war or for peace this motto has always expressed the Borg-Warner ideal, and it operates for your benefit in that it helps you produce ever better products at ever lower cost.

Partners with the Aviation industry in peace and war, Borg-Warner supplies these and other essential parts...

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Peacetime makers of essential operating parts for the automotive, aviation, marine and farm implement industries, and of Norge home appliances . . . these units which form the Borg-Warner Corporation are today devoted exclusively to the needs of war: BORG & BECK • BORG-WARNER INTERNATIONAL • BORG WARNER SERVICE PARTS • B-W SUPERCHARGERS, INC. • CALUMET STEEL • DETROIT GEAR AIRCRAFT PARTS • DETROIT VAPOR STOVE • INGERSOLL STEEL & DISC • LONG • MARBON • MARVEL-SCHEBLER CARBURETER • MECHANICS UNIVERSAL JOINT • MORSE CHAIN • NORGE • NORGE MACHINE PRODUCTS • PESCO PRODUCTS • ROCKFORD CLUTCH • SPRING DIVISION • WARNER AUTOMOTIVE PARTS • WARNER GEAR

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This Issue

All New Engines Due to Be Jets in 10 Years

Planes of Future May Fly 100 Miles Above Earth, Lockheed Engineer Says

By WAYNE W. PARRISH

SO REVOLUTIONARY is jet propulsion and so great a change will occur in the aviation world because of this newly developed means of propelling aircraft that the reciprocating engine will have disappeared from all new planes after eight or 10 years, Hall L. Hibbard, vice president and chief engineer of Lockheed Aircraft Corp., Burbank, Cal., told this writer in an interview on the west coast.

Jet propulsion has not only opened the way for the first time to really great speeds far in excess of those possible with internal combustion engines, but yet will make it possible for planes of the future to fly perhaps 100 miles above the earth's surface, he said, while the jet engine also will find useful application in light planes and helicopters of the future. Every conventional type fighter plane is now obsolete, he said.

Hibbard

The man who believes firmly that jet propulsion is opening a new age in air transportation, should know what he's talking about. Hibbard is the chief engineer responsible for the fastest and highest flying plane in the world today—the Lockheed P-80 Shooting Star. A brilliant engineer at the top of his profession, Hibbard is one of the best recognized authorities in the field of aeronautics. What he has to say carries weight.

There is no problem connected with the use of jet propulsion that has not been solved that cannot be solved, he said.

"Jet propulsion that now makes the Shooting Star the world's fastest and highest-flying airplane is proving so successful that without question all fighter planes of the future will be jet propelled. "Conventional-type fighter planes are now obsolete.

"The Shooting Star has solved the problem of long range in a jet-propelled fighter. Its range compares very favorably with that of present reciprocating engine fighters."

Admittedly the jet engine is still in an elementary form, he said. It has been only eight years since the first jet engine —the one developed by Air Commodore Frank Whittle of the Royal Air Force—first operated successfully.

"There have been only eight years of development, yet those eight years have seen major improvements. Consider the improvements that will have been made when the jet engine has received the comparable years of development that the reciprocating gasoline engine has received."

Hibbard was positive in his views that the United States is far out in front of the rest of the world on jet development.

"The Americans are far in the lead in jet propulsion," he said.

"We know that the present General Electric jet engine used in the Shooting Star is the most powerful aircraft engine ever built. It is far superior to the present British jet engines. And we know that the Shooting Star is faster and has several times the range of the German jet planes."

Asked about the future of jet with air transportation, Hibbard said:

"Jet propulsion is a principle that has been understood for centuries. Development of a commercially practical engine was made possible only by metallurgical improvements.

"Jet propulsion opens the door to a new age in air transportation.

"It eliminates the barriers that propeller-driven aircraft seemed to reach at speeds in the 400 to 500 mile an hour class. In this range we were fighting to achieve a plane that would go even ten miles an hour faster than previous models. But the truth is that we had to turn to a new source of power—for the efficiency of the propeller drops off sharply at speeds of more than 450 miles an hour.

"Jet propulsion is comparatively inefficient at speeds lower than 500 miles per hour. It reaches its greatest efficiency at speeds over 500 miles per hour."

Will jet propulsion make it possible to surpass the speed of sound?

"We find that air behaves in a strange manner when it passes over a wing surface at speeds in the range of the speed of sound—about 763 miles per hour. This phenomenon of compressibility affects every surface of the airplane, and the propeller is affected first because the speed of the tips of the propeller is much faster than the speed of the plane. Compressibility causes a violent vibration or buffeting. We can't explain the phenomenon successfully, although we have theories as to what happens.

Theoretically No Speed Limit

"Once this compressibility range is passed, however, there theoretically is no limit to the speeds we can attain. But speeds surpassing the speed of sound are probably impractical close to the ground where planes are bothered by the problem of overcoming air resistance.

"Planes of the future, therefore, probably will fly out of the earth's heavy atmosphere to heights of maybe 100 miles above the ground where air resistance is negligible. Speeds at that altitude will have no limits caused by air resistance."

Looking even further into the future, Hibbard predicted that rocket-propelled airplanes will probably be used for high flying airplanes of the future.

"Probably such high flying airplanes of the future will be rocket propelled. The Germans already have a rocket plane, the Messerschmitt 163, which has no ceiling except those imposed by a limited fuel capacity and the effect of pressure upon the pilot.

"If the fuel problem were solved and if provisions were made to provide the pilot with a liveable pressure inside the

Hall Hibbard Says—

Conventional-type fighter planes are now obsolete.

Jet propulsion opens the door to a new age in air transportation.

The present General Electric jet engine used in the P-80 Shooting Star is the most powerful aircraft engine ever built.

Planes of the future probably will fly out of the earth's heavy atmosphere to heights of maybe 100 miles above the earth's heavy atmosphere where air resistance is negligible—and probably they will be rocket propelled.

Jet propulsion is practical for small private planes.

The reciprocating engine will have disappeared from all new airplanes after eight or ten years

Jet power will be ideal for helicopters.

Mexico Hotbed of Aviation Expansion

Pangs of Growth Evident in Battle Of Route Permits and Concessions

MEXICO HAS "JUMPED THE GUN" on postwar air transport development. Long before the war is over, it is a hotbed of competitive aviation expansion.

Right now it's largely on paper. It's a battle of airline route permits and concessions. But surplus planes are beginning to filter down into Mexico and the curtain is beginning to rise.

Mexico is about to experience the pangs of expansion that the United States experienced in the late '20's. It will be both healthy and unhealthy. Much money is involved. Much money will be lost, and some money will be made.

It will be a many-sided battle. There are the airlines that have been in existence who will be fighting to retain their positions. There are new U. S. domestic airlines fighting for position. And to complicate matters in a way not possible in the U. S., there are brand new money groups, inexperienced and unknown in aviation, who have acquired permits to "get into aviation." Even a Canadian group has been trying to get an entering wedge—so far without success. If there's any room left, British, Dutch and French capital probably will try to get a foothold.

It's a scramble. Right now it's being done with mirrors and without planes. But the planes are coming. Where it will all end is anyone's guess. For the brake that should be applied by Government isn't likely to be applied.

Back of the scramble are three primary factors. One factor which cannot be overlooked is that the Mexican Government wants much more air service. Government officials know little about costs of airline operation; all they do know is that they want more and better air communications than they have had. A second primary factor is that various U. S. domestic airline interests believe Mexico offers big traffic potentials and a field for expansion. A third factor is that certain U. S. money groups, faced with high taxes at home and few outlets for quick turnover in profits, look upon Mexico as a place of refuge for private capital to walk in and clean up. Needless to say, these money groups have only read about aviation in the newspapers or they wouldn't be so anxious to start airlines.

There is no doubt that Mexico is set for air expansion. In a large sense it's a "natural." Ground transportation is either terribly slow or non-existent. Mexico is growing industrially. There is more money there than ever before. Inflation is potentially dangerous. Tourists will be flocking to Mexico in very large numbers. A hotel and real estate boom is on. The airplane is not only the best method of travel but in many instances it is the only way. And aside from tourists and businessmen, there is ample opportunity for down-to-earth transportation for the average man. It's either muleback or airplane in many places. Mexico is really a paradise for the airplane providing the economics and politics are right.

On the other hand, the airlines must invest much more in ground facilities than airlines do in the U. S. The Mexican Government, and the average Mexican city, provide virtually nothing except the patronage. Airports with surfaced runways cost money, so do adequate radio facilities, so do airport buildings and maintenance shops. A constant source of complaint by the Mexican Government is that airlines have not built adequate facilities in the past. Sometimes one wonders why they haven't. Sometimes one cannot blame the airlines.

But today Mexican aviation is in the realm of power politics with U. S. airlines playing the leading roles.

Pan Am Prominent

First of all there is Pan American Airways with its international route from Brownsville to Mexico City and beyond to Guatemala. And there is PAA's direct Mexican affiliate, Compania Mexicana de Aviacion, S. A. (CMA), in which it still holds a substantial interest after having given away and sold a large block of stock. And then there is Aeronaves de Mexico, S. A., in existence since 1929 as a domestic system, in which PAA owns about 40 percent. These three PAA systems dominate by far all of the routes now in operation.

Pan American accounts for 3668 miles, CMA for 7148 miles, and Aeronaves for 3157 miles, totalling 13,973 miles, out of a grand total of 47,078 miles operated and/or certificated in Mexico.

As in the remainder of the world, PAA does not intend to give up its dominance without a battle. And the battle will probably be bitter.

For other U. S. airlines have begun to edge into the Mexican picture to challenge PAA's position.

The first to get into Mexico was American Airlines with an international ro

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(Continued from preceding page)

cockpit, such a rocket plane could fly to the moon."

But jet propulsion is not to be used only to propel high flying airplanes.

"Is it practical for small private planes? Yes, but there probably will be a transition period of several years before such planes use pure jet power. I look for an interim period during the next eight to ten years in which all planes flying under 500 miles per hour—including transports as well as small private planes—will be powered with gas turbine engines that revolve a propeller.

"For planes flying faster than 500 miles per hour, the power will be pure jet. I believe the reciprocating engine will have disappeared from all new planes after eight or ten years."

As for helicopters, Hibbard believes "definitely they have a future, and jet power probably will solve many of the problems that now make helicopters expensive and difficult to build, costly and dangerous to operate.

"Jet power will be ideal for helicopters, especially if the jet power is made to spurt downward through the tips of the rotor blades—so that the rotor blades will resemble a lawn sprinkler upside down. Such a helicopter will be easy to build. It will eliminate the necessary of having counter rotating props or a protruding propeller at the tail, which are now needed to counteract torque. Such jet power coming from the rotor blades can be used to provide both forward and lifting power by tilting."

PRINCIPAL AIRLINES IN MEXICO

	Miles
International	
Pan American Airways	3,668
American Airlines, Inc.	2,417
Braniff Airways, Inc.	238
TACA	1,246
Domestic	
Cia. Mexicana de Aviacion, S. A. (PAA)	7,148
Lineas Aereas Mexicanas, S. A. (United)	3,860
Aerovias Braniff, S. A. (Partial operation)	7,453
Aeronaves de Mexico, S. A. (PAA 40% interest)	3,157
Servicio Aereo Panini, S. A.	1,815
Transportes Aereos Mexicanos, S. A. (TAMSA)	2,158
Comunicaciones Aereas de Veracruz, S. A.	1,935
Aero-Transportes, S. A.	1,794
Aerovias Azteca, S. A. (not operating)	2,688
Aero-Transportes de Sonora (not operating)	784
Cargo Routes	
Transportes Aereos Mexicanos, S. A. (TAMSA)	971
Aerovias Azteca, S. A. (not operating)	1,636

(Small industrial airlines not listed)

to Mexico City. Apparently with no intention of competing domestically, American's sole effort has been to capture international traffic—and it has done very well in the process. American has a Mexican corporation but solely for non-operating purposes. It has promoted the route heavily and has made friends. The Civil Aeronautics Board gave American a wartime permit only, but there seems little doubt about the permanence of the route. What pleased Mexicans was the excellent airport which American built at Monterrey and its radio range system. The Mexican Government ordered CMA, PAA's domestic affiliate, to use both the Monterrey Airport and the radio range facilities and CMA is today paying American Airlines for both privileges.

Next came United Air Lines' purchase of Lineas Aereas Mexicana, S. A., known as LAMSA, with a potentially important route down the center of Mexico from El Paso, with another branch leading from Nogales. The mileage is 3860. If and when connected with Los Angeles, LAMSA has the shortest route between Mexico City and Los Angeles, and the best year-round flying weather by a wide margin. LAMSA also taps a number of important and profitable cities such as Chihuahua and Torreon, and has a cross-country route between Mexico City and Nuevo Laredo. United owns LAMSA outright, but will undoubtedly permit Mexican participation when the development program is completed. Of all U. S. companies, United is committed to spending real cash for airports, buildings and other facilities, on a substantial scale. Its venture into Mexico is both long-range and sincere.

Braniff vs Pan Am

Then came Aerovias Braniff, S. A., organized by Tom E. Braniff, president of Braniff Airways, to link into the U. S. company at Nuevo Laredo. Scheduled to start April 4, Aerovias Braniff is the greatest single potential threat to Pan American's domestic company. Although Braniff has only two DC-3s at present, if he obtains sufficient equipment to cover all of the 7453 miles of routes for which he has obtained permits, he will have the second largest network in Mexico and larger even than Braniff Airways in the U. S. Most interesting to watch will be the two routes which most nearly parallel CMA, between Nuevo Laredo and Mexico City, and between Merida and Mexico City. These are to be opened first. CMA plans to take the matter of paralleling into the courts, and already has endeavored to have Braniff's permits cancelled. But canny, shrewd Tom Braniff is probably the most imposing challenger that Pan American has had to its Mexican empire. If he is permitted to get started, he will be difficult to depose. Braniff is a sound operator and will give Mexico A-1 service if he gets half a chance.

A fourth U. S. challenger, oddly enough, is coming from the south instead of the north. This is TACA, the Central American system in which TWA owns a sizeable share and is currently managing. TACA is operating four times weekly from El Salvador into Mexico City on an international service. It would seem natural enough for TACA to want to expand to the U. S., possibly to Los Angeles where it could hook in with TWA, or perhaps to Phoenix or some other point. And there seems to be some sort of liaison worked out with the small but important Communicaciones de Veracruz in southeastern Mexico which may have considerable traffic importance for TACA. In any event, TACA is not to be underestimated either for international or domestic traffic.

But these four don't complete the list by any means. Recently an examiner of the CAB recommended that Western Air Lines be given an international U. S. certificate to fly from Los Angeles to Mexico City, and the route would virtually parallel PAA's domestic route operated by CMA although Western could not carry local traffic in Mexico. Nonetheless it stands to reason that Western would dig in heavily on CMA's through business, especially Americans. Western is not interested in local business within Mexico.

Then there is Eastern Air Lines. Eastern has made no overt move to get into Mexico City, but in Mexico one hears frequently that Eastern will "get in" one of these days. If it does, it will eat heavily into PAA's international traffic which originates at Brownsville, unless PAA can obtain routes within the U. S. There are rumors in Mexico that Eastern will buy up a Mexican domestic airline but such rumors are without confirmatoin.

Another contender is Chicago and Southern Airlines which wants to jump off for Mexico at Houston, its present terminus. And the examiner's recommendation that Braniff Airways be given a route from Houston to the Canal Zone via Merida, Mexico, is not to be overlooked for its effect on traffic in and out of Mexico.

But these are all existing American airline companies. There is other U. S. capital endeavoring to get a foothold. For example, there is a new company, known as Aerovias Azteca, S. A., that has been given permits for 2688 miles of passenger routes and 1636 miles of cargo routes. And the routes meander all over Mexico, treading on everyone's toes, and not designed to stabilize the already-turbulent aviation picture in Mexico.

President of Aerovias Azteca is Allen Chase, a real estate man of Los Angeles and unknown to aviation generally. James G. Davidson, a Los Angeles businessman, is a vice president. William Brady, of Mexico City, is a director and assistant treasurer. There are other Americans in the company but none with aviation background.

Azteca has purchased several surplus Budd cargo planes and intends to start operating immediately. American pilots will be used temporarily. The company is endeavoring to purchase other transport planes and it is known that Mexican Government aviation officials, or some of them at least, are leaning kindly toward the new venture. About 15 per cent of the capital is said to be Mexican. Old-timers look askance at the boldness with which Azteca is launching an airline system with no personnel background, and wonder if the line is being started in order to sell later at a profit. The economic survey was conducted by Alvin P. Adams and Associates. Adams is a former president of Western Air Lines. Adams' assistant was A. A. "Boon" Hartsinck, one-time U. S. representative of K. L. M., Royal Dutch Airlines. It is said that Adams advised the company against starting operations, predicting a heavy loss the first year. But Azteca is going ahead anyway.

Markel Holds Interest

Then there is Aero-Transportes, S. A., in which an American, Sam Markel, and several others, are interested. Manuel C. Reachi was president and general manager until recently. Now he is only a director. A Washington OPA official, Dewey Wayne, is mentioned as possible manager. The company is operating in the red, according to one of the officials in Mexico City, although it has some potentially good routes. What it lacks is experienced personnel.

Another company with dominant U. S. capital is Comunicaciones de Veracruz, which is a combine of several smaller systems in eastern and southeastern Mexico. William T. Churchill Morgan is president. Far out of bounds of tourist travel and without a route into Mexico City, Comunicaciones is a regional and local carrier in areas where surface transport is all but non-existent. It does a sizeable cargo business. But Morgan is now reorganizing and strengthening the

MEXICO'S MILEAGE

International routes	6,975	miles
Domestic routes operating	22,885	"
Domestic routes authorized but not operating	10,925	"
Cargo routes operating	971	"
Cargo routes authorized but not operating	1,636	"
Industrial (private) airlines licensed	3,610	"
Grand total operating	34,517	"
Grand total licensed	47,078	"

U. S. MILEAGE

Certificated routes operated	(Jan. 31, 1945)	63,527	miles
Certificated routes suspended	(Jan. 31, 1945)	14,408	"
Total certificated		74,400	"

Aviation Calendar

April 14-15—CAA Non-Scheduled Advisory Committee meeting, Des Moines.

April 16—World Air Transport Operators meeting, Havana.

April 16—Meeting Board of Directors, NAA, Washington.

April 24—First meeting Aircraft Industry Advisory Committee of WPB, Washington.

June 3—Interhemisphere conference on frequency allocations and revision, Rio de Janeiro.

June 7-9—Annual Convention, Aviation Writers Association, Chicago.

Oct. 31-Nov. 3—National Aviation Clinic, Oklahoma City. Pre-Clinic Conference Oct. 27. (Arrangements tentative, depending on ODT regulations in force at that time.)

company and modernizing it with the latest radio facilities. It operates 1935 miles which indicates a system of considerable size.

This leaves only two airlines of any size which have no U. S. capital. One is Servicio Aereo Panini, S. A. operating 1815 miles and with a long-time record of local service even though with inadequate equipment; and Transportes Aereos Mexicanos, S. A., (TAMSA) operating 2158 miles of passenger routes and 971 miles of cargo routes in Yucatan and eastern Mexico. At present TAMSA has no route into Mexico City, but its present system is potentially important unless it suffers from too much competition.

There are a half-dozen very small passenger lines and about ten industrial airlines, all but one of them small.

But the main battle in Mexico will involve American capital. The net result five years hence depends in large measure on the moves made by Pan American Airways. It would seem clear from current observations that PAA will endeavor to make CMA more and more Mexican in character and financial complexion. CMA and Aeronaves probably will work toward a nationalization program and against "foreign" airlines, and such a national appeal may ring a bell with Mexicans who don't care too much, to begin with, for their northern neighbors.

Likes American Capital

If these were prewar days, such a nationalization program would click with the people without much question. Today, with substantial American capital going into all forms of Mexican life, with hemisphere politics much smoother than before, and coupled with an ability to give good service on the part of other American companies, the nationalizing appeal may not work as successfully as anticipated. Mexicans not only like competition inherently, but CMA has numerous enemies in the Government. CMA has undoubtedly been blamed wrongly for a great many things; it is difficult to appraise the rightness or the wrongness of the charges. What counts most is the fact that the Mexican government, as presently constituted, seems determined to let in American capital to build airline services and has issued permits for routes that closely parallel CMA. If PAA and CMA are right in their estimation of Mexico, the newcomers may find themselves swallowed up in due course. There is no doubt that PAA and CMA can push nationalization a long way if they wish to do so.

CMA has some very choice routes, and routes which should always be profitable if service is provided. It is by all odds the largest organization in Mexican aviation, and the best organized. It has the finest fleet of planes. Whether it will choose to keep its leadership in a competitive field, or whether it will choose to scuttle the whole field in order to keep out competition, remains to be seen.

One thing already is known. CMA will not offer aid to any of its American competitors. It has told Aerovias Braniff that it won't sell gasoline or permit use of its facilities to it, although it sells space to LAMSA at its Mazatlan building. In a country where transportation facilities for fuel are tough at best, other companies won't find the going easy.

On the Government side, the successor to the late Maximino Avila Camacho, Minister of Communications and Public Works, is Pedro Martinez Tornel, very highly regarded and respected by everyone in transportation. There seems no doubt that Tornel is endeavoring to do an honest, constructive job for the betterment of air transportation in Mexico.

Under him, as Director of Civil Aviation, is personable, popular General P. A. Alfredo Lezama Alvarez. General Lezama came to his position from the Mexican Air Force. Without any prior airline experience, he is doing his best to administer the department. He has the best reputation of anyone in this position for some time. His primary weakness may be in not being able to distinguish between good and bad operations and experienced and inexperienced operators. On the other hand, perhaps Mexico's future and its air salvation is to let in all comers and let the strong survive.

Assistant Chief of the Department of Civil Aviation is wise, experienced, long-time airman and engineer Juan Guillermo Villasana, one of the pioneers of Mexican aviation.

But watch Mexico. What happens there will have vital bearings on Central and South America. Much of what happens concerns U. S. air policy directly or indirectly. And much of what happens has no relation to ground transportation, in contrast to the U. S. It is big-time pioneering in which much money and many airplanes will play the leading roles.

—W. W. P.

Airlines Expect to Receive First New Planes This Year

Plan Set Up to Have Transports Ready During Last Quarter

AIRLINES WILL BE PERMITTED to order all the new DC-3s and C-46s they need, the Aircraft Production Board has decided after hearing an outline by Henry Nelson, chairman of WPB's Aircraft Division of the recent Airlines Advisory Committee meeting. APB agreed with the airlines opinion that it is more economical to obtain new planes than to reconvert Army transport models and said there is no question of the airlines getting the two-engine transports as soon as details can be worked out.

After hearing Nelson's statement the Board asked for a detailed report on airlines requirements and justifications as soon as possible in order to determine how much four-engine equipment, if any, can be made available. Forms have been sent to all airlines asking for detailed reports of first, second and third choices on equipment and why it is necessary.

It is hoped that a sub-committee of the WPB Airlines Advisory Committee will have its report ready for submission to APB at its next meeting April 16. After needs of the airlines are established and details of handling the allocation of new planes to the airlines are worked out, the factories will be able to begin work on the planes which are to be actually consigned to airlines. It is anticipated that the first of them will be reecived in the fourth quarter of 1945. Whether the number assigned to airlines will merely be subtracted from the overall quotas of the plants, or will be provided for in some other manner has not been definitely determined.

The appointment of Henry Nelson to the Aircraft Production Board which is composed of WPB Chairman J. A. Krug and high officials of the Army Air Forces and Navy Bureau of Aeronautics, represents the first time that civilian aircraft interests have had a spokesman on this Board which is responsible for the allotment of aircraft facilities and materials. Informed observers see in this move real evidence that the APB now recognizes essential civilian aircraft needs.

Frye is Chairman

The special sub-committee of the WPB Airlines Advisory Committee which was appointed to formulate the requirements of the airlines for new equipment is composed of Jack Frye, president of TWA, Franklin Gledhill, vice-president of Pan American, Ralph Damon, vice-president of American, and C. Bedell Monro, president of PCA. Technical assistants to the four airline officials have been working with the Aircraft Division for the last two weeks preparing the detailed estimates of requirements. The technicians are Bob Lees of TWA, R. A. Fischer of American, W. R. Manchester of PCA, and C. T. Ramsey of Pan American.

Airline operators have been asked to specify types of planes required, manufacturer and model designation and required deliveries by quarters beginning with the fourth quarter of 1945 and ending with the fourth quarter of 1946. They have been advised that this information should be based on the assumption that new aircraft sufficient in number to meet the essential needs of war transportation will become available with the fourth quarter of 1945, that operations will be restricted to presently-approved route mileage and that models now in production are the only planes available.

New appointments in the Aircraft Division include the naming of Leo S. Pane as assistant director and Jean Dubuque formerly special technical adviser in the postwar division of the Army Air Forces as director of the division's Aircraft Production Branch.

Col. Jouett Heads Survey

Col. John H. Jouett, former president of the Aeronautical Chamber of Commerce, is heading the Maritime Transportation Survey Commission which the Higgins Industries, Inc., of which he is vice-president, is undertaking for the Mexican Government. The survey includes water, rail, highway and air transportation. His headquarters are at Edificio Guardiola 504, Avenida Madero in Mexico, D. F. Col. Jouett is vice-president of Higgins Aircraft, Inc., of New Orleans.

Trippe and Patterson vs. Pogue and Clayton

Presidents of Pan Am And UAL Strongly Urge 'Chosen Instrument' Line

By GERARD B. DOBBEN

THE CASE for the single community company in connection with this country's plans to participate vigorously in the postwar era of international air commerce is now a matter of public record as a result of testimony given late last month before the Senate Commerce Aviation subcommittee by Juan T. Trippe and W. A. Patterson, presidents of Pan American Airways and United Air Lines.

Appearing at hearings on the All American Flag Line bill (S. 326) these leaders in the U. S. air transport field, endorsed the principle and objectives of the McCarran measure, which proposes to create a $200,000,000 single company in which all of the existing domestic and American Flag airlines would buy stock.

Neither Trippe nor Patterson would endorse the bill in its present form. Both men suggested many changes in the bill and both recommended that U. S. surface transport and steamship companies be permitted to participate so that there would be provided an incentive for the surface lines to route overseas air traffic to the single U. S. company rather than to competing air services operated by foreign countries.

Endorsement of the principle of the single company also came from labor groups including the Brotherhood of Railroad Trainmen and the International Association of Machinists. Labor centered its interests largely around a desire to protect their wage standards from the threat of low wage competition from abroad.

"United American effort is necessary if the United States is to retain its standing of first place with other international air transport systems," Trippe told the committee. "Authoritative traffic studies show that it is not in the public interest that there be competition between U. S. air carriers in international service who must also meet competition from the powerful subsidized monopoly airlines of all of the great trading nations of the world."

Foresees Keen Competition

Genuine cooperative unity among the airlines of the United States was offered by Patterson as the device with which the United States lines can meet the competition offered by foreign airlines. Foreseeing keen competition from government-owned or government-controlled foreign lines, Patterson declared that the prospects for transocean travel are insufficient to permit U. S. domestic lines to profitably compete against one another in the international field as well as against foreign airlines.

Trippe said that "to divide our strength, to force American air companies to compete against each other as well as against the foreign airline monopolies who are out to dominate world trade routes, is a guaranteed way to turn our air leadership over to foreign nations—just as we have lost our leadership on the seas and in international communications."

Trippe

Patterson

Clayton

Pogue

A chart was offered into evidence which showed that the domestic travel by rail and air between cities 100 miles apart totals 21,300,000,000 passenger miles. Total international traffic to and from the United States, by all means of transport—sea, railroad and air—totaled but 4,800,000,000 passenger miles, the Pan American data indicated. The total United States traffic—land, bus and air—is divided 82% domestic and 18% international, Trippe pointed out.

Referring to the criticism that a single U. S. foreign airline would be "too big to handle," Trippe explained that any U. S. Flag Airline, carrying all of the international traffic, would still be smaller than the largest of the domestic airlines here at home.

The four largest domestic airlines carry 91% of the total domestic air traffic and all other domestic airlines share the remaining 9% he said. Of the 91% total, American Airlines alone carries 30%, he pointed out.

Projecting this analysis into the future, five years from now, and quoting official government and industry survey figures, Trippe said that the total traffic available to one U. S. international airline would be only about 20% of the total of United States traffic.

"And this 20%," Trippe stated, "would be subject to the competition of all foreign flag airlines competing on world routes with the American-Flag airline."

Trippe said it was his opinion that the United States had only three choices: 1. Controlled competition between U. S. lines, competing among themselves and at the same time competing against foreign-flag monopolies. 2. A zone system which would permit, for instance, two American carriers in the North Atlantic area—two to Latin America, and one

(Turn page—column 3)

CAB Chairman, Assistant Secretary of State-Air Hit McCarran Measure

THIS COUNTRY'S present position of leadership in the field of aviation, its belief that international air commerce is at the threshold of a tremendous expansion, and its traditional adherence to the theory of regulated competition were some of the arguments presented before the Senate Commerce Aviation subcommittee April 2 against the adoption of a "chosen instrument" in international aviation.

W. L. Clayton, assistant secretary of State-Air in testifying in opposition to the McCarran All American Flag Line bill, S.326, said:

"I believe that our policy should be based upon the assumption that there will be a tremendous increase in (international) traffic if facilities to handle it are available, and that we should put into service as soon as possible the aircraft required to handle this traffic, and make full provision for rapid expansion to take care of the heavy increase which I am confident will develop."

"Any policy, therefore, based upon the assumption that the amount of traffic is only such as to justify the operation of a limited number of planes to be divided among a very limited number of companies is short-sighted in the extreme. It would mean freezing our international aviation policy at the very time it should be most flexible. It is possible that some of the estimates of traffic and the number of airplanes required may prove reasonably accurate for the initial period, but we should not adopt a long-range policy based on short-range probabilities."

Clayton said that if a U. S. monopoly is created in international air competition, it would offer the danger of private deals with foreign lines leading to cartels, and would inevitably result in government ownership. He said the McCarran bill is contrary to the policy the State department has adopted in the international economic field.

Pogue Makes Four Points

L. Welch Pogue, chairman of the Civil Aeronautics Board, after stating that U. S. government policy has always been against the single airline operation, made four strong points against a "chosen instrument" policy for this country. They were:

1. The establishment by legislation of a "chosen instrument" . . . would place upon one small group of private individuals responsibility for handling matters having tremendous national importance. The vast extent of our probable future international air-transportation operations, their economic and political significance in the affairs of the nation, and the importance to the nation of having a way open to assure the carrying out of national policy is of paramount importance. To establish by legislation a "chosen instrument" would place one company, assured by national policy of remaining as a "chosen instrument", in a position of power which might enable it to defeat public policies unacceptable to

the management. The immunity of the management from effective discipline by the Government would be almost complete. We could not afford to cancel certificates, fail to give new ones where the public interest otherwise requires them, or even do anything publicly by fining or reprimanding in order to enforce Government policy. Our loss abroad would be too great. In any event, regulation cannot reach or mould motives or those basic objectives of men which escape detection but which none the less guide their actions. As long as it is possible under the law to have more than one company in the international field, however, there is not the same risk of complacency toward or nonconformance with governmental policy.

2. The strength which will be necessary to meet competition from foreign-flag air lines will not necessarily be measured by size whether in certificated route miles, in volume of operations, or in some other sense . . . We believe that a point may well be reached where the scattering of management's attention and other complexities growing out of any size may weaken rather than strengthen an undertaking.

Step Toward Nationalization

3. The establishment by legislation of one "chosen instrument" would seriously endanger continued private ownership . . . It seems to us clear that the prevailing disposition of the American people is to avoid any such trend here and to maintain the largest possible measure of private control and direction, subject to proper government control and to the checks of competition. For the U. S., which has been foremost in air transportation and which is clearly leading the world in its development at the present time, formally to adopt a "chosen instrument" policy would be a long step towards nationalization. The countries which have in fact adopted that policy have either done so concurrently with the establishment of immediate government ownership or direction of air transportation or have tended to move toward such ownership as time went on. For many countries such a course involves no conflict with the general trend of their social and economic policy. We believe in the U. S., on the other hand, the conflict would be unmistakable.

A "chosen instrument" in international air transportation would be universally considered outside the U. S. as being an arm of government. Its policies would have to be so closely integrated with those of the national government as to make it necessary that its personnel and the departments of government work together as closely as members of a single organization. If any company is to be put into that status, it should not be subject to the mixed and possibly conflicting considerations of national interest and private property. It should be fully and exclusively responsive to considerations of national interest, in a sense that could only be obtained by making its actions continuously subject to governmental direction. That would be the inexorable logic of a situation, which, when it has arisen elsewhere, has exerted the strongest impulsion toward government ownership.

4. On the whole, we feel that the American public opinion is opposed to the idea of a single American-flag air carrier in international air transportation guaranteed of its position as such by law . . . We must place in competition, at least potentially, our own managerial talent, our own technical competence and our own genius in other aspects of international air-transportation operation if we are to draw from them achievements which will permit us to surpass those already attained and maintain the strength necessary to assure our excellence in international air transportation.

Pogue then told the committee that if Congress should decide on the "chosen instrument" policies, many features of the McCarran bill should be changed and some of the ambiguities cleared up.

Sen. Josiah W. Bailey (D., N. C.) chairman of the committee, was not sure that this country might not suffer a fate similar to that experienced by the steamship companies under free competition. However he said he was definitely against a "monopoly" of ownership in air commerce and pointed out that the McCarran bill would have to be amended to prevent such a monopoly. He said if Pan American Airways was permitted to hold 25% of the voting A stock and 90% of the B stock, it might not take long for it to gain an alliance with one of the other airlines holding a 13% or 11% stock ownership to gain control. He said the bill should be amended so that no group could gain a monopoly of control.

18 Min. vs 10 Days

What may be a record for a plane surpassing ground transportation is to be found in southeastern Mexico where Comunicaciones Aereas de Veracruz is flying an 18-minute hop over rugged country that requires 10 days by muleback, the only other means of transportation. It is one of the utility routes pioneered by Garret "Peck" Woodside, no longer with the airline. As much as 400 tons of coffee a month is flown over one segment of the Comunicaciones system.

Aeronaves de Mexico Buys Six Avro Ansons

Aeronaves de Mexico, S. A., one of the largest domestic airline systems in Mexico and in which Pan American Airways owns 40 percent interest, has purchased six Avro Anson twin-engined trainers from Canada for use on its local lines in Mexico, Carlos Ramos, general manager, has announced. The Ansons will be converted into eight-passenger transports.

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In January, 1945, Aeronaves reached a new traffic record by carrying 2600 passengers on its Mexico City-Acapulco route.

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Trippe and Patterson

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on the trans-Pacific route. 3. A unified effort as strong and efficient as possible to bid for the 18% of all overseas traffic that is available to U. S. carriers.

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"Does this provision mean that we should compete with ourselves, and compete with foreign lines at the same time? Does it mean that we should have a system of zones? Does it mean we should have one community company to compete against foreign airlines?" he asked.

He then told the committee that this provision was written into the Civil Aeronautics Act in 1938 before all of this country's prospective foreign competitors had adopted the policy of having one airline in overseas service. Since the enactment of that law, conditions have changed materially, Trippe stated.

"Congress should now consider the question of American policy in overseas air transport in the light of the policies that other nations have adopted since enactment of the original Civil Aeronautics Act. These precedents will throw a great amount of light on what our policy should be if we are to continue first in the international air transport field," he stated.

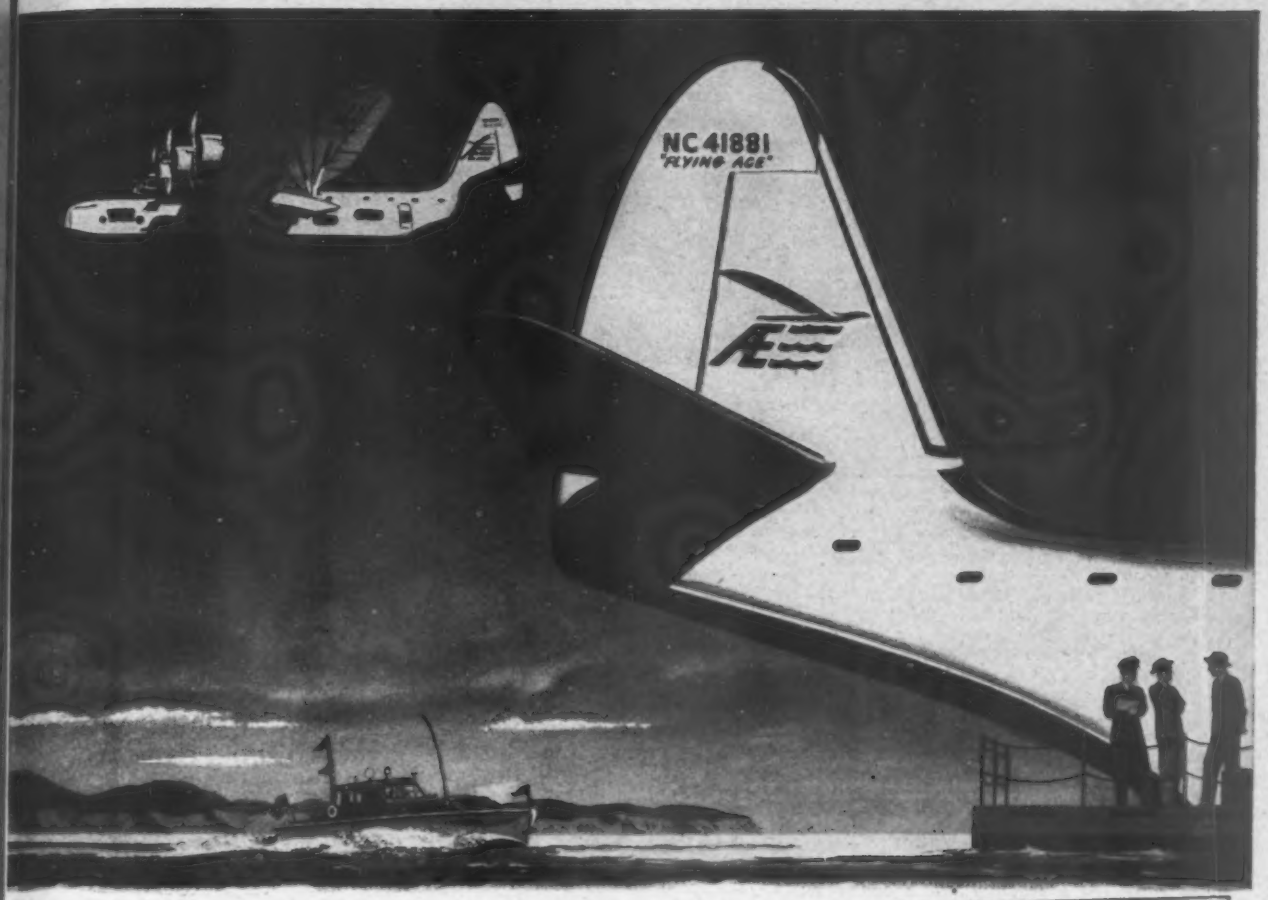
Refers to AA-AMEX Deal

Referring to the application of American Airlines to purchase American Export Airlines, approval of this merger would put the largest domestic carrier, with the largest traffic market, in competition with Pan American, which would be confined to whatever share they could get of the much smaller international traffic, he said.

"If the domestic airlines, with 82% of the U. S. traffic strength, are permitted to operate in the foreign field, then the foreign operator, for its own survival, and for fair competition, would have to be permitted to operate in the domestic field," he added.

Trippe said these two fields of transportation had been separate for 17 years under American transport policy. To change it now, he stated, would inevitably weaken both the domestic lines and the international operator. If American Airlines was permitted to operate in the international field, its domestic competitors would be forced into alliances with foreign operators to deliver foreign-destined traffic to them at ports of entry and to receive from them trans-oceanic passengers coming to this country.

Asserting that Pan American had contracted for the construction of three large type planes, the largest of which would carry more than 200 passengers, Trippe told the committee on the basis of Pan



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——— Routes Now Operated — — — Routes Applied For

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The company seeks no monopoly in its applications and welcomes competition in the American way. Its record to date in the international air transportation field has proven the desirability of competition by American flag operators. The company's performance record, even in the face of difficulties arising out of the war, has established a yardstick to be used in figuring rates for passengers, mail and cargo, as well as for operating procedures and actual dependability and speed of schedules.

For information and reservations, Call or Write—

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Routes Now Operated — — Routes Applied For

American Export Airlines has flown the Atlantic day and night, winter and summer, under war conditions for approximately three years. During this period the company has operated under temporary certificates—however, it has made application for permanent certificates covering far-flung routes, as shown by map.

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American's traffic studies, eight of these planes could carry all of the North Atlantic air traffic in the winter months of 1951 and 11 of the planes would be sufficient for the summer months. He estimated there would be a total of 440,000 passengers to cross the North Atlantic in a year and these 11 planes could do the job, even on the basis of 50% capacity load.

Figures were presented by Trippe to show that ground costs in air transport fluctuate with the number of trips or frequencies. An increase of two cents per passenger mile in ground costs, due to reduced ferquencies, would saddle $30,000,000 a year annually on the traveling public in increased fares or the taxpayer through government subsidies, he stated.

"Pan American is pointing to mass traffic in the future," Trippe testified, "that will reduce the cost of travel to four cents a mile. Under such a program, passage to Europe could be offered at $100 or less."

Patterson told the committee that he felt the McCarran bill is a constructive contribution leading to an intelligent discussion of what he considered to be a very serious problem facing American aviation in international competition.

Calls for Cooperation

"I think that the bill in detail is something that just cannot be worked out until all parties get together; first that we have a Government policy and, second, that if a chosen instrument happens to be the final decision, then it will be necessary for all interested parties to get together and determine the amount of capitalization necessary, the form of organization, voting powers and all such details.

"So, in brief, I would say that I don't think that I could endorse the detail of Sen. McCarran's bill but I do think that it presents a theory and a philosophy with which I am in complete agreement. I believe that everyone knows that I feel very strongly that the only way for us to compete with foreign countries is through the chosen instrument. In principle I am opposed to monopoly. I am opposed to cartels, as a business principle, for this country domestically. On the other hand, I feel that we must have a policy sufficiently flexible to take into consideration the particular facility, and the form of the facility that our foreign competition sets up and then be able to adjust our philosophy to meet that competition," he declared.

To a question by Sen. John M. Overton (D., La.), Patterson said he felt that every precaution should be taken to prevent speculation on the part of the airlines in the stock of the All American Company, that it should not be transferrable but should be sold back to the treasury of the company to avoid speculation or manipulation.

Sen. Overton then asked Patterson if he would favor a provision which would require that while each participating company could name one director, that the remaining 10 directors would be on a straight majority vote basis of the member companies rather than on the ratio of their Class A stock holdings to the total Class A stock holdings of the company.

Patterson said he saw no particular objection to such a plan. "I think," he stated, "that every precaution and safeguard should be set up to prevent any concentration of control, and I gathered from the bill that that was the intent in a general way."

Patterson said the bugaboo of monopoly, raised by the opponents of the plan, ought to be dispelled when it appeared reasonably certain that on the North Atlantic routes, there would be at least seven foreign competitors in the field.

He said that United's studies had indicated that 40 airplanes could carry all of the North Atlantic route passengers during the three peak months of the travel season. He asserted that surveys made by the British, by the Civil Aeronautics Board and by a group of economists in South America varied but 3% from United's findings.

To a question by Sen. Theodore G. Bilbo (D., Miss.), Patterson said his company undoubtedly would be willing to buy stock in the single company, on an equitable basis of distribution. When Bilbo asked him if he would buy $50,000,000 worth of the stock on the basis of the McCarran proposal, Patterson said he would make no such recommendation to his stockholders, as he felt there were other types of investments which would offer his company a greater percentage of return. He said he definitely did not agree with Sen. Bilbo's description of Class A stock as being a "gold mine." Patterson said he could not say that he favored an equal division of the Class A stock but he would favor distribution on an equitable basis.

Like Sen. McCarran, Patterson said he felt it might be advisable to permit surface companies, including railroads and shipping interests, to buy stock so that all forms of transportation would be interested in backing a single line in international competition. He would not favor surface companies gaining any measure of control, he said.

At his press conference, Patterson said he did not feel that Pan American would be put out of business as it would still be the basic organization from which to build. He said he felt the single company idea had a good chance to pass Congress "if we face the issues on the basis of facts instead of pressures." He suggested a little "British realism" in American thinking on the question. He thought that a technical committee representing all of the airlines participating in the new company would insure technical progress in operating equipment.

Plane for Club— John W. Friedlander, right, president of Aeronca Aircraft Corp., is shown with Rep. Jennings Randolph, president of the Congressional Flying Club as the former presents the Club with an Aeronca for use of Club members interested in learning to fly. Presentation took place at Congressional Airport, Washington.

Fifteen Congressmen Will Become Real Pilots

Secretary of Commerce Henry A. Wallace isn't the only high ranking official in public life learning to fly. Fifteen members of Congress are flying at Congressional Airport, Washington.

They are members of the Congressional Flying Club, which is headed by Rep. Jennings Randolph (D., W. Va.). The Club now has two planes, and will shortly have a third. A Piper Cub and an Aeronca have been provided the Club, and a Luscombe will be presented within a few days.

An organization patterned after the Congressional Flying Club is expected to be formed soon in Stockholm. Capt. C. H. Nordenskiold, assistant military attache for air, Swedish Legation, Washington, has forwarded a copy of the charter of the Washington organization together with other information about it to aviation leaders in Sweden's official family.

RFC is Taking Over 31 Warehouses From AAF

The RFC on April 15 was scheduled to take over 31 warehouses heretofore operated by the supply division of the AAF and on June 15 will place them in operation as reservoirs and disposal points for materials and equipment made surplus by contract terminations and cutbacks in the war industry. This includes War, Navy and Maritime Commissions contractors.

These warehouses still have space available, although they are well stocked. Civilian personnel will probably be transferred from AAF to RFC. A number of experienced officers of the AAF Technical Service Command plant clearance section have been de-commissioned recently to permit them to join RFC for this program.

The aircraft industry anticipates that it will have less use in the postwar years for surplus materials it generates in wartime than any other industry. Most of the postwar designs will call for new high strength aluminum alloys, other metallic alloys, and advanced equipment design, of which no appreciable quantity is in current production use.

Accordingly, if the industry anticipates an annual aluminum consumption at the optimistic level of 10 percent of today's volume, it can be realized that less than one percent or two percent of leftover aluminum may ultimately find its way into postwar aircraft.

While the RFC operation of the surplus material warehouses is considered a good move generally, the present weakness in the plan is the responsibility placed upon the industry to screen, describe and classify the material or equipment, when such responsibility should be placed upon the RFC, since the RFC will doubtless have to go through the same procedure anyway.

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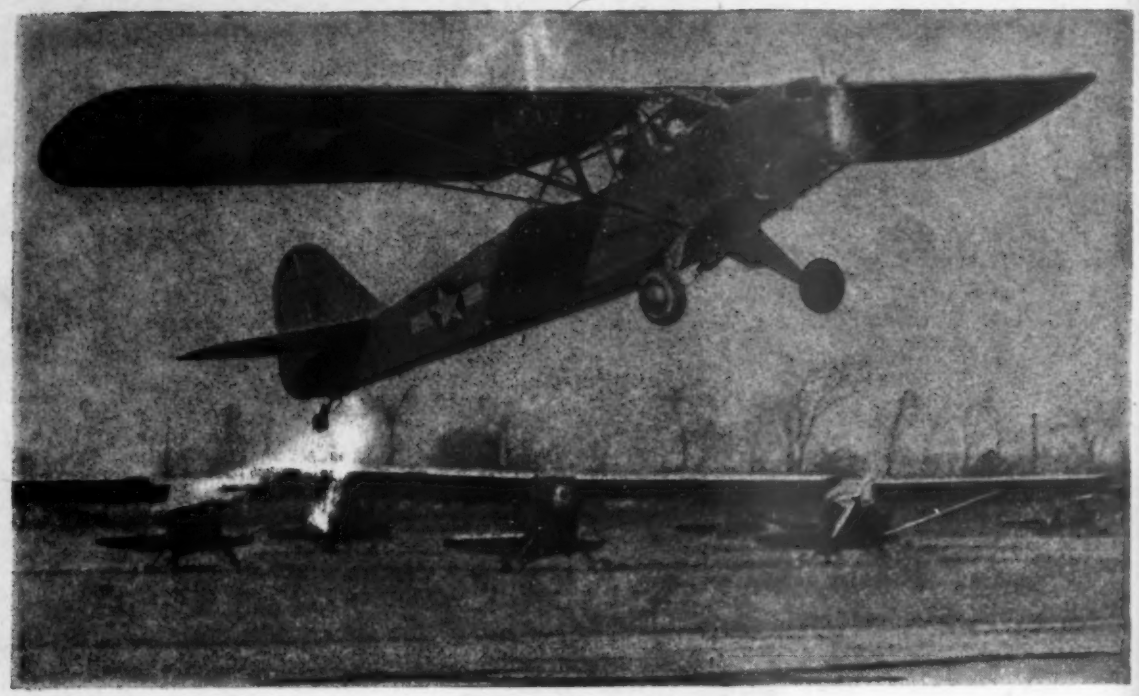

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Its only defense its extreme maneuverability, this little 65 horsepower two-place "flying flivver" may have in its control the lives and fortunes of regiments of American fighting men. Obsoleting the observation balloons, it can take off in the thick of battle, spot the enemy, relay the information to the artillery quickly and accurately from point-blank range, help hit the enemy hard where it hurts the most. Unheralded and unsung, these Taylorcraft Grasshoppers and the men who fly them are turning in a job day after day over every battlefield that rightly entitles them to the name, "the eyes of the Army".

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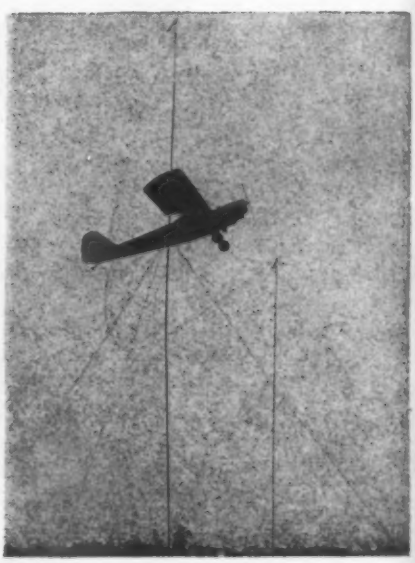

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Pioneering the way to lighter, stronger, safer tires, "U. S." engineers built tires of rayon cord—a construction now standard of the service. Today U. S. Royal Airplane Tires, built of rayon and of nylon are serving on bombers and fighters in every theatre of the war. Their light, strong bodies take the shock of carrier deck landings and come back for more.

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Two Federal-Aid Airport Bills Being Studied by New Committee

DIFFERENCES between two Federal-Aid Airport bills upon which extensive hearings have been held, and a variety of suggestions and recommendations which came from a score of witnesses are now being studied by a newly appointed Senate subcommittee in connection with its assignment to draft a new committee bill.

Sen. Pat McCarran (D., Nev.) author of one of the airport bills (S. 2) was made chairman of a subcommittee of five members to draft the new legislation. Other members of the committee, all of them chosen from the Commerce Aviation subcommittee of 11 members, are: Josiah W. Bailey (D., N. C.) author of Federal-Aid airport bill S. 34, Warren G. Magnuson (D., Wash.) Harold H. Burton (R., Ohio) and C. Wayland Brooks (R., Ill.)

The major differences between the two bills center about the amount of money involved, the length of time that the program would be in effect and the classes of airports which should be administered at the State and local levels.

Sen. McCarran's bill stipulates that a sum of $100,000,000 shall be appropriated annually for five years, to be matched by funds from the States or local political subdivisions. Class II and smaller airports would be administered through State Aviation commissions while local communities would sponsor projects for Class III and larger airports, dealing directly with the Federal government as was done under the Federal Works Agency program.

80 Million Yearly

The Bailey bill authorizes the appropriation of $80,000,000 annually for 10 years, with the States administering the program on Class III and smaller airports and local communities permitted to sponsor Class IV ports and larger. Both bills allocate definite percentages of the funds between the so-called State and urban programs.

While there was universal support for the program as a whole, the Governors' Conference, which also represented the National Association of State Aviation Officials, was highly critical of the methods which the Civil Aeronautics Administration had used in arriving at the number of airports that should be built or improved, as embodied in the National Airport Plan submitted to Congress last fall. The Governors recommended that Congress appropriate funds so that CAA could make a "Grass Roots" survey which would make possible the preparation of a National Airport plan based on the needs of the several states and their communities. They inferred that there had not been close consultation or cooperation with State Aviation authorities in the preparation of the latest plan—the fifth revision.

In addition, the Governors strongly emphasized the need of administering the entire program at the State, rather than, the local level. They contended that only in this manner could airports be built in accord with both the needs of the State, the local communities and the Nation. They would make provision for local communities dealing directly with the government in cases where the State failed to exercise its opportunities to participate under the Federal-Aid program. In general they recommended that the airport development program follow the pattern successfully set by the Federal-Aid Highway program, with special consideration for States having large Federal domain areas.

On the other side is the viewpoint of the United States Conference of Mayors, led by such prominent figures as Fiorella LaGuardia, of New York, and Edward Kelly, of Chicago, who definitely want to by-pass their State governments and deal directly with the Federal government in connection with their airport projects. Mayor LaGuardia pinned on the State governments "The Johnny Come Lately" attitude and stated that airport development in this country thus far had largely come about through local initiative, with little help or encouragement from the State capitols.

When LaGuardia was asked by Sen. Owen Brewster (R., Me.) whether Congress, in passing this legislation, should take into account funds already granted the larger municipalities in connection with their airport programs, the New York mayor said: "Certainly not. That is all past." Brewster brought out that the Federal government had spent $28,000,000 on New York's LaGuardia airport while other cities had received little Federal help. The following day, Sen. Brewster pressed this same matter during testimony of another witness and he mentioned New York press dispatches which had quoted LaGuardia as saying that he had been to Washington in the interests of getting a little more "pap" out of the Federal government.

Reconciling the major differences between the Governors and the Mayors promises to be one of the toughest problems to face the new committee. From purely political considerations, the mayors probably have the inside track because under the terms of the bills, Congress would share with the CAA Administrator the responsibility for approving the urban projects. This is the pork barrel feature of the bill as some observers view it.

The committee also will have to deal with Sen. Bailey's views on the question of financing. Throughout the hearings, Sen. Bailey propounded questions pertaining to the methods of raising the Federal governments share of the funds and indicated he favored a bond program so that the expenditures might be amortized from the earnings of the industry, through license fees, airport use charges and taxes on aviation fuels.

Generally this idea met with universal opposition. Rep. Jennings Randolph, (D. W. Va.) strongly urged against taxing an industry at a time when added costs might impede its maximum development. He pointed out that under the Federal-Aid Highway program adopted in 1916, the Federal government did nothing to hobble the infant automobile industry and that with the coming of the good roads, the industry soon grew to such proportions that it was able later to bear the major costs of road building. He told the committee that this country was spending billions of dollars abroad for the aid and assistance of the peoples of the world and that the Federal government could not well overlook its responsibility to foster a highly desirable public works project in its "very front and back yard."

Opposed by Tipton

Another who strongly opposed the taxing of the industry to pay for the program was Stuart G. Tipton, acting head of the Air Transport Association. Tipton said that if air transportation is to expand in the manner hoped for, costs have got to come down. Added taxes on the airlines would postpone the day when passenger fares could be reduced to a point where the average citizen can afford to travel by plane—a factor which would have to be realized if the industry is to expand greatly in the postwar era.

Likewise William P. McCracken, chairman of the Civil Aviation Joint Legislative Committee which represents some eight aviation trade associations and Charles Upham, Engineer-Director,

Sky the Limit?

The sky (rather than three miles from shore) may be the limit if the bill of Sen. Edward V. Robertson (R., Wyo.) to prevent sale of alcoholic beverages on domestic airlines becomes a law.

It is understood that someone suggested to the Senator that U. S. International operators, who now have the privilege of serving liquor on international flights, may operate in the domestic field as they have applications on file to serve interior points in this country. Obviously this would set up a conflict.

Whereupon the Senator is reported to have suggested that possibly a 10,000 foot limit might be imposed as the dividing line between dry and moist air, assuming of course that domestic flights operate under the 10,000 feet limit.

Tank Goes for Ride— Tanks and field guns now can be hauled on the belly of the C-54 Skymaster as the result of experiments by the Douglas Aircraft Co. and the AAF Air Technical Service Command. Here a T-9 tank is being hoisted to the C-54 belly by two hydraulic pumps where it is snapped to a special rack.

American Road Builders Association, emphasized the need for following the historical policy as laid down in the Federal-Aid Highway Act wherein the government took the lead in financing the programs until the benefitting industry was able to share a portion of the cost.

Upham recommended that the Federal government, immediately upon passage of the airport bill, make available 20% of the first year's funds to the States so that they could get surveys started and plans prepared. He reminded the legislators that there is a time-lag of approximately one year to 18 months from the time that a survey is launched to the letting of the contracts and the beginning of work. Contending that 12% of the national income during prosperous times must be generated through the construction industry, Upham said that this was one way through which Congress could help to assure prosperity in the postwar era. He urged speed with reference to the passage of the basic act.

Favors Private Engineering

He further recommended that construction work be done by contract, stating that the American Road Builders Association studies indicated that 118 airports could be built by contract at the same cost of 100 airports under the day labor plan. He recommended that private engineering, to the extent that this talent is available, do the planning work under proper State and Federal supervision.

Sen. Bailey kept returning to deficit spending on the part of the government and said the day was coming when it would have to stop. He doubted the far-reaching wisdom of trying to keep up employment through made work programs financed on borrowed money, asserting that employment induced through profits offered the only hope of getting the government back on a sound financial footing.

Col. Roscoe Turner, president of the National Aviation Trades Association, made a plea for the thousands of pilots and airplane mechanics who will wish to make aviation their postwar careers in his testimony before the subcommittee.

He contended that private flying will be the most important part of postwar aviation, that if small fields are built, thousands of war veterans will obtain jobs as flying instructors, pilots of sight-seeing or charter planes, mechanics and operators of concessions such as gasoline stations and lunch stands.

Last Straw

Old-timers in aviation well remember the Pilgrim plane which has virtually disappeared from the U. S. scene but which has been flying regularly on Latin American airline routes. The TACA system in Central America has been considered the final resting place of many a weary old patched-up plane, but so acute is the plane shortage in Latin America that a "Believe it or not" occurred a few weeks ago: TACA has sold a Pilgrim to Comunicaciones Aereas de Veracruz in Mexico. As the boys in the backroom say, "When TACA sells a plane, brother that's *really* a crate that's seen service."

Advisory Committee Urges Modernizing of Regulations

Vigorous Attitude Produces Results On Medical Tests

By BARBARA C. McNAMEE

RESOLUTIONS strongly urging action designed to modernize the regulations and programs of the Civil Aeronautics Administration were presented to Administrator T. P. Wright at the conclusion of the first meeting of the Non-Scheduled Aviation Advisory Committee. The recommendations dealt with medical examinations, revisions in Civil Air Regulations, radio in private aircraft, weather, CAA information and statistics and surplus light plane disposal.

Washington observers noted many indications of the Committee's enthusiasm and feeling of responsibility. Among these were the voluntary extension of the two-day meeting to a five-day session and the demand by committee members that the meeting of the sub-committee on airports in Des Moines April 14 be open to the full committee.

"At the Des Moines meeting we will explore the possibilities of a more complete program of landing facilities than CAA has so far proposed," Arthur Boreman, chairman of the Committee, said. "We think maybe a much larger project of 10,000 to 30,000 landing fields of all types might be possible at a minimum cost to the taxpayer. A large project may be more justifiable economically than a piecemeal job," he added, "since it would insure greater postwar employment and make possible early production of more personal planes."

The first direct result of the Non-Scheduled Committee's activities was the order, sent out by Administrator Wright, directing that in the future medical examinations for the private pilot's license may be given by any qualified physician. A sub-committee has been appointed to draw up a simplified form to be used by the doctors in giving the examination. The Committee's resolution asked that "Medical examination of applicants for private pilots' licenses be given by any registered physician who will be guided by a simplified form provided by the CAA, containing a minimum of physical requirements."

Heads of other sub-committees are Edward Garbacz of Little Rock, Ark., for aircraft radio problems; William A. Mara, vice president of Bendix Aviation Corp., for publicity; and Fred Weick, of Engineering and Research Corp., for gliding and soaring.

Two Years Allowed

Believing that economic regulation of non-scheduled operations would be stifling to their development the Committee recommended that "the general exemption order, Section 292.1 of the Economic Regulations should be continued in effect until at least two years after the conclusion of the war. This will permit experience to be acquired; returning veterans to participate and also to take full advantagfie of all benefits to the public which may be made possible by new types of planes. We strongly believe the best interest of the public will be served by encouraging the development of air taxi, rent-a-plane and other types of non-scheduled flight activity."

Stating that air marking is as necessary to the cross country flyer as route marking along our highways, the Committee recommended that CAA's system of air marking be extended to every community in the country and praised Cessna Aviation Corp. for its "initiative in urging air-marking."

The Committee petitioned the Federal Communications Commission, through

Smiles for the Future—Members of the CAA Non-Scheduled Aviation Advisory Committee are shown in session in Washington. Seated, left to right: Beverly Howard, president of Hawthorne School of Aeronautics; Ed Williamson, Bearing Service Co., Seattle; Harry Playford, St. Petersburg, Fla.; Arthur I. Boreman, Des Moines, chairman of the Committee; and T. P. Wright, Administrator of CAA. Standing: Joseph Bergin, director of the Utah State Aviation Commission; Douglas Robinson, Air Safe Co., Tucson; William A. Mara, vice president of Bendix Aviation Corp.; Edward Garbacz, Central Flying Service; John Groves, Air Transport Association; Fred Weick, Engineering and Research Corp.; James C. Johnson, Springfield (Mo.) Flying Service; William T. Piper, president of Piper Aircraft Corp.

THE "GOONIE-BIRD" landed in rugged shape one afternoon . . . 2 engines out . . . another leaking oil . . . hydraulic system out . . . control cables half gone; two men eligible for the Purple Heart.

Then Casey took over, Casey the Crew Chief, and his gang of mechanics. They worked all that night . . . in a downpour. They didn't have any regulation block and tackle to dismount the engines. So they used a palm tree and a ship's hawser instead. And in 16 hours, they took out 3 engines; mounted 3 new ones; repaired the hydraulic system and installed new control cables. Then two of the mechanics flew as gunners in the Goonie-Bird, to replace the guys wounded yesterday.

Men like these mechanics have got inside them a great hunk of that special American brand of mechanical genius and ingenuity. They'll come home with a whale of a lot to contribute to the factories and airports of the nation; and quickly and permanently, men like these will establish America as the leader of the world in commercial aviation.

Handmaiden to a High-Powered Lady...

THOSE THREE NEW ENGINES *Casey installed may have been rust-proofed with Rust-Ban 604. The instruments, starters and hydraulic system parts of the Goonie-Bird may well have been rust-proofed with Rust-Bans. And so throughout the plane. With over 50 types of petroleum base Rust-Bans, originated and developed by Esso, there is a fine protective coating available for almost every type of bare metal under any atmospheric condition. Rust-Bans, widely used both in industry and by the Army and Navy, are further proof that "You can depend on Esso Aviation Products."*

CAA, to simplify radio licensing requirements "so that anyone can easily obtain a license for an aircraft radio transmitter and a license to operate it," to eliminate radio frequency checks when satisfactory transmission is maintained." It was also proposed that private pilots be allowed to give free lessons without an instructor's license.

Criticizing the "dull and uninteresting" appearance of the Civil Air Regulations, the Committee recommended "modern advertising techniques, as exemplified in Army and Navy training pamphlets, be employed to better acquaint the public with safe operating practices." It also asked CAA to make available the lists of plane owners, certified pilots and student pilots with their addresses now buried in its files. And unanimously it recommended "intensive study regarding approach channels to airports be made to take advantage of new devices and methods, some of which are now secret."

To provide continuity, committee members will serve overlapping two-year terms. One half of the present committee will serve only a one-year term. Those who will continue for the second year are: Arthur Boreman, chairman and representative of consumers; John Groves of the Air Transport Association; William A. Mara, vice president of Bendix Aviation Corp. representing Region 3; Douglas Robinson, Air-Safe Co., Tucson, Ariz., Region 6; Fred Weick, Engineering and Research Corp., Region 1; and Ed Williamson, Bearing Service Co., Seattle, Region 7. Quarterly meetings will be held in Washington with sub-committees meeting more frequently. The next full committee meeting will be devoted to improvements in personal planes, aviation insurance and other topics to be suggested by members.

Bailey Appoints Two More on Committee

While future committee jurisdiction over aviation bills in the United States Senate was still a smoldering issue, Sen. Josiah W. Bailey (D., N. C.), chairman of the Senate Commerce committee, appointed two additional members to the Commerce Committee's subcommittee on aviation.

The new members are: Sen. C. Wayland Brooks (R., Ill.) and Sen. Warren G. Magnuson (D., Wash.)—a new member who previously had served in the House of Representatives. These appointments increased the membership to 11 Senators.

The Senate three weeks ago debated the jurisdictional issue which has been raised by the fact that Harry S. Truman, president of the Senate, referred S. 351, companion of the Lea Aviation bill H. R. 674, to the Interstate Commerce Committee instead of the Senate Commerce Committee. Because of Senate rules, the upper chamber failed to reach a vote on the question of Sen. Bailey's resolution which seeks to take the bill away from Interstate and refer it to Commerce. The resolution is on the Senate calendar and can be called up for consideration under the morning session rule at some subsequent date. Debate on the Mexican Water Treaty, manpower legislation and the Aubrey Williams confirmation as R. E. A. administrator, has delayed consideration of the measure.

Meanwhile on the House side, Rep. Schuyler O. Bland (D., Va.), chairman of the House Merchant Marine and Fisheries committee, appointed a subcommittee entitled "Merchant Marine in Overseas Aviation," in accordance with a House resolution which permits further study of the needs of shipping companies in the field of postwar competition. The subcommittee is comprised of: Reps. Eugene J. Keogh (D., N. Y.), chairman; Edward J. Hart (D., N. J.), J. Hardin Peterson (D., Fla.), Herbert C. Bonner (D., N. C.), Henry M. Jackson (D., Wash.), Richard J. Welch (R., Cal.), Fred Bradley (R., Mich.), Alvin F. Weichel (R., O.), and Ralph E. Church (R., Ill.).

Because Rep. Bland's bill which would amend the Merchant and Marine Act to permit shipping companies to enter the field of international air transportation was still on the Speaker's desk due to a question of reference, it appeared that the subcommittee would not hold hearings until the question of committee jurisdiction has been settled. Matters pertaining to aviation normally are referred to the House Interstate and Foreign Commerce committee.

Nine States Pass Legislation To Take Part in Federal Aid

Economic Control Measures Gaining Some Recognition

NINE LEGISLATURES had, as of April 1, passed legislation either creating state aviation agencies or adopted amendments to existing acts so that the states may be in a position to help promote the prospective development of postwar aviation and participate in any federal aid programs that may come out of Congress.

The state assemblies which had passed and approved acts and the designation of these bills as passed are: Indiana H. 211, Chapter 360; Montana H. 84; New York A. 79, Chapter 60 (previously reported as S. 4); North Carolina S. 80; North Dakota S. 173 (substituted for S. 54); South Dakota H. 130, H. 131, H. 132; Washington S. 241; West Virginia S. 168; and Wyoming S. 62.

Status of other aviation agency bills was: Colorado, H. 323 hearing held March 12; Minnesota H. 521 reported with amendment, passed House March 16, S. 707, same as H. 521 reported with amendment; Nebraska LB 282, amended March 20, after third reading; and Texas S. 125, sent back to subcommittee for further study.

New bills introduced were: Iowa, H. 358, by Aeronautics Committee, passed House March 8, reported favorably by Senate March 15; Pennsylvania, H. 1172 amends first six paragraphs of Sec. 407 of Administrative Code of 1929, P. L. 177, by increasing the Aeronautics Commission from four to eight members, two additional members to be from the House and two from Senate, additional members may participate in deliberations but may not vote, passed House on third reading March 27, now in Senate committee; Rhode Island, H. 831 empowering public works director to become administrative head of division of aeronautics, to House Judiciary Committee.

Bills which would impose state economic regulations had made some progress. Arkansas passed S. 324, but amended the bill to exempt interstate air carriers. Vermont's House passed H. 189, a bill which provides a degree of economic regulation. The bill is of the type sponsored by the National Association of Railroad and Utility Commissioners.

New economic regulation bills introduced included H. 924 in Minnesota which provides for the regulation of air commerce in intrastate operations. This was reported favorably by the House committee on aviation. Other such bills were: Minnesota S. 943, same as H. 924; New Jersey A. 386; Oklahoma S. 220; Rhode Island H. 922 and Texas H. 708.

NASAO Act Draws Objection from CAA

The Civil Aeronautics Administration has expressed objection to the section of the Uniform State Aeronautics Act dealing with the certification of aircraft and airmen.

The act was drawn up by the National Association of State Aviation Officials and has been introduced in a majority of the state legislatures in session this year.

T. P. Wright, CAA Administrator, in letters to the State Relations Committee of ATA and to the NASAO asserts that his objection to the certification section is based on the fact that there may be conflict between state and federal certificates for aircraft and airmen, and that federal certification should prevail in all cases.

Wright said that state certification should not apply to flying schools and aeronautics ground instructors who have been certificate or rated by the federal government, nor should the states' certification interfere with airports, restricted landing areas or other air navigation facilities already certificated or rated by the federal government.

Wright recommended further that the states adopt no rules which would be contrary to the air traffic rules prescribed by the federal government, and that the licensing of aircraft remain in the jurisdiction of the federal government.

Wright said the CAA has taken no position "for or against" a state aviation tax, pointing out, however, "that if such tax is levied it should not be burdensome, and that no state should spend less than is received from an aviation gas tax on the promotion and development of aviation in the state. This statement applies not only to gas tax, but all taxes on aviation activities or equipment in the state."

Harvard Report Studies Air Power Policies

How to Assure Military Strength as Peace Insurance Poses Vital Problems

CONSISTENT POLICIES for the continuance of U. S. leadership in air-power must be adopted, otherwise the economic costs and military risks of "muddling through" may be disastrous, according to an article written by Lynn Bollinger, Albert E. Lombard and Tom Lilley for the Spring issue of the Harvard Business Review.

"The principle of retaining military power as peace insurance so long as we must live in the midst of an armed world is now generally recognized," the article stated. "How to assure this power, especially, in such a rapidly developing field as aviation, is an unanswered problem we dare not neglect."

While reaching no definite conclusions in answer to the problem, the article cited these questions as being pertinent:

1. What size peacetime air forces will meet our military needs and still be economically feasible?
2. What Government policies should be adopted to stimulate a healthy rate of technical progress?
3. How can a properly balanced and rapidly expansible nucleus of productive capacity be maintained in peacetime?
4. To what extent should plans for any future wartime expansion rely upon the peacetime aircraft companies, and to what extent should such an expansion involve conversion of auto and other non-aircraft industries?
5. What should civil aviation and exports play in supporting our peacetime military aircraft industry?
6. What plans for transition from the present war to peace should be made in advance to assure the preservation of an industry adequate for tomorrow's tasks?
7. How should the air forces and Government civil agencies concerned with aviation be most effectively organized?

With respect to the size of the peacetime air force, the article held that a large standing military force "is not the simple answer, particularly if through burdensome taxation it weakens the industrial strength of the nation."

World Air Force?

"The problem appears, therefore, to be a determination of the minimum nucleus necessary to forestall aggression and to act as a base for rapid expansion." The possibility of creating an international air force is another factor which must be considered, the article said.

With respect to peacetime technical developments in aviation, the article pointed out that Government policy would be a determining factor.

"Two different questions of Government policy will particularly affect the technical progress of the peacetime aircraft industry," the article said. "The first has to do with the rate of replacement of military aircraft and the second has to do with procurement methods and the handling of expenditures for developmental work.

"In view of the easily recognizable importance of technical progress in aviation, public opinion may be oversold on experimental research as a goal in itself, to the detriment of development in its broader import.

"Frequently, aeronautical development is regarded as consisting only of the production of the protype, followed by the manufacture of a few planes for 'service tests.' Hence, the too narrow goal of many who favor maximum developmental work is merely the production of new improved prototypes.

"Such a concept overlooks the fact that the mere existence of engineering advances embodied in a few trial models does not necessarily provide a useful military asset.

"A more complete development cycle is essential to assure a really useful military product. This development cycle consists of a proper balance among these three factors: (1) purely engineering development, culminating in the prototype and a limited number of 'service test' articles; (2) production in sufficient quantities to discover necessary design and tooling innovations; and (3) operational use in sufficient quantities to uncover the inevitable modifications necessary in adapting the equipment to the requirements of tactical use."

The article concludes that "it is clearly important to the establishment of a sound national air policy that the facts be determined regarding the interrelation of initial developmental work, production and operation."

"Only after these facts are fully known can an intelligent policy be established for the allocation of public funds among basic research, engineering development, and operational testing."

One of the questions to be settled in this respect, the article said, is "whether the Government should continue the present practice of giving experimental contracts to companies on a cost-plus-fixed-fee basis, or whether the companies should develop equipment partly or wholly out of their own funds."

With respect to holding together an "expansible production nucleus" in peacetime, the article pointed out that there is one view that if existing Government-owned aircraft plants "are to be useful to the national defense, they must be used in manufacturing some sort of peacetime products, thereby contributing to industrial prosperity and creating a nucleus of active facilities, labor and management.

"An important criterion in judging the value of stand-by facilities will undoubtedly be the imminence of an early war emergency as distinct from the long-run possibilities."

The article concluded that "whatever its composition, the size of the peacetime aircraft industry will apparently depend in large part, upon the size of orders received from the armed services, supplemented by those received from the transport industry, and from the export market.

"If normal military orders plus commercial and export orders provide sufficient volume to maintain a production nucleus of the size desired to meet potential war needs, the Government's problem is minimized.

"If this normal business does not keep alive the nucleus initially considered essential, a reappraisal of each element will be necessary. Under such circumstances, these possible alternatives exist:

"(1) The Government could deliberately place more production orders for planes than immediately needed, just to keep alive the facilities and skills which might be required for a future emergency.

"(2) More plants could be put into the stand-by category.

"(3) Mobilization plans could be changed and greater reliance palced on the use of nonaircraft industries for emergency expansion.

"(4) The Government could deliberately foster additional development of the air transport industry or other civil aviation in order to build our total national aircraft production by increased civil rather than military expansion."

Air Transport Essential

The article stated that "for any future emergency, plans must recognize that air transport will take its place alongside rail and highway transportation as an essential element in our mobilized economy," but pointed out that the danger exists that "public thinking may place too much reliance on support for the manufacturing industry from airline orders."

With respect to subsidization of the airlines, the article stated that the "presence of large direct subsidies could have a very unfortunate effect on the competitive stimulus for growth and efficiency which already is operating."

"Carried to an extreme, the idea of

One Way Only

United Air Lines' flight personnel who have gone to Mexico to look over the LAMSA airline system, which United owns, have learned a few new tricks in flying over one segment of the LAMSA routes. The San Luis Mining Co., a Hearst property, has a mine called Tayoltita far up a gorge in the mountains east of Mazatlan. LAMSA makes frequent flights to the mine with a trimotored Bach of not-too-recent vintage. (It's 35 minutes by air or four days by mule.) A landing strip 1469 feet long and 100 feet wide adjoins the river 7500 feet down in the narrow canyon. Once the plane starts down it has to keep going toward the strip for there isn't room to turn and climb out. Take-off at the bottom is directly toward the solid rock of the canyon. United pilots think they'll stick to the Chicago-New York airway. Even old-timers agree that Tayoltita is one of the top airfield spectacles in the world.

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knowledge in all of these fields

having a transport industry operating in part as a military adjunct, especially on overseas routes, is likely to be anathema to the American people. The same could be said for the operation of private flying and other phases of civil aviation primarily as a military adjunct.

"Moreover, such ideas are contagious; other large nations would be likely to match our subsidies or try to better them, particularly if large subsidies were granted to our international air carriers."

The article held that it would be impractical at this stage to attempt to guess about the future size and importance of the export market for aircraft, since the answer depends on such unknown factors as "our international relations, the competition that other producing nations will provide and the extent of foreign purchases of war surplus equipment."

In a discussion of the disposal of surplus aircraft, the article suggested these three categories—Class I: those which are new, or nearly so, and are required for the Army and Navy Air Forces at their peacetime strength until superseded by more advanced types;

Class II: those which should be scrapped because they are unserviceable and so "service weary" as to make further peacetime use dangerous or inadvisable;

Class III: those—a very large number—which are new, or nearly so, but which, unlike the items in Class I, are not needed by the Army and Navy.

Military Necessities May Delay

"The military necessities of this period may make necessary some delay in disposing of Class III surpluses," the article said. This was based on the threat of continued internal strife or guerilla warfare in Europe and the Pacific.

". . . The indiscriminate sale of surplus planes and components in civilian markets can be harmful to the development of commercial aviation, causing long-continued use of obsolete types, holding back technical progress, and minimizing the support a thriving air transport industry can give to our aircraft manufacturing potential."

The article held that sound solutions to the problems involved in the surplus disposal questions must assure:

"(1) That the armed forces are not saddled with quantities of obsolete equipment for a long period of years; (2) that surplus disposal does not interfere with the continuation of experimentation in both military and transport aircraft components; and (3) that surplus disposal does not impede the flow of new orders needed to maintain the production and testing of new and improved equipment."

Unusual Planes Patented

Patents recently granted to Edward A. Stalker, Ann Arbor, Mich., for two unusual aircraft have been assigned by the inventor to Dow Chemical Co. The first of the two planes is of a fixed wing type with a novel arrangement of slots and valves to permit the pilot to steer the plane by regulating the flow of air through the slots. An auxiliary vane mounted on a pivot directs the flow to the slots differentially in accordance with the wind direction. The second is for a rotary winged aircraft with a spanwise flap and slot on the rotar blade.

India Squadron Flies 50,000 Hours Losing Only One Plane

'Here's a Map, There's Your Plane; Have the Cargo in China Tomorrow' Order Carried Out

By Eric Bramley

HEADQUARTERS, TWENTIETH BOMBER COMMAND, INDIA—There is an Army air transport outfit here in India that has flown 50,000 hours—a large portion of them over the Hump—with the loss of only one plane.

As is the case in the Pacific area where such outfits as SCAT, DAT and others fly, the operations of this Air Transport Squadron (Mobile) have passed largely unnoticed.

The ATS is assigned to XX Bomber Command, and is credited with doing an outstanding job of hauling gasoline, other supplies and personnel to the forward B-29 bases in China. The one plane that was lost went down in the Assam Valley. There have been no losses over the Hump.

This squadron arrived in India in April, 1944, and began operations over the Hump almost in one motion. There were no elaborate preparations. The outfit moved into a field that had one runway and no buildings. The pilots, whose average age was about 22 and who had less than 100 hours on the Curtiss C-46s they were to fly, slept in tents, as did the ground crews.

A small advanced detachment had arrived about a month before the main squadron and already was operating the Hump—and Indian routes—when the squadron arrived with its planes. The "veterans" of the advanced detachment (they already had one or two Hump trips) had obtained their own maps and manuals. They passed these on to the newcomers, gave them a route check and some advice. The newcomers were then considered check pilots, and soon all pilots were "qualified"—qualified to do some of the world's roughest, toughest flying.

Eric Bramley

. . . in action.

As one pilot describes it: "It was practically a case of being told 'here's a map, there's your plane—have your cargo in China tomorrow.'"

From its India base to China and return was 3000 miles—farther than across the U. S., but infinitely more difficult. There are the monsoons, low ceilings, ice and terrific turbulence. Despite this, during one month of 1944 departures from the Indian base averaged 15 daily, with a high of 32. In nine months, ATS flew 4000 net tons over the Hump, making some 1400 round trips. For a short time, operations were conducted from a base in the Valley, shortening the trip so that a pilot could fly to China and back the same day.

Special missions were flown in China, advanced fighter outfits were supplied and other tasks carried out. The overloaded planes often took off from and landed on muddy, slippery runways, often circled in the overcast while enemy planes bombed their destination.

Cause of Accident Unknown

The cause of ATS's one fatal accident is not known (it happened during a thunderstorm). There have been numerous instances where pilots have been forced to dump their loads after losing an engine or having other trouble, but they always managed to get their planes back safely. The squadron's one minor accident occurred when Lt. Thomas H. Gebhart belly-landed his C-47 in a field with 23 passengers and their baggage and 3000 lbs. of cargo aboard. No one was injured and the plane was only slightly damaged.

Responsible for the squadron's remarkable safety record has been the maintenance crews, who work against almost insurmountable odds—heat, rain and lack of equipment. (They used oil drums as platforms for engine work.) As time passed and their record of no fatal accidents mounted, both pilots and ground crews increased their vigilance. Never was a plane dispatched that was not as mechanically perfect as they could make it; never was a plane lost due to mechanical or structural failure. (Although the cause of the fatal accident is not known, it is believed that the severe thunderstorm was mainly responsible.) Because they had started with nothing and had built up their outfit, morale was tops. Their operation might not be stateside, airline stuff, but it was as good as they knew how to make it.

Ironically, a March thunderstorm ac-

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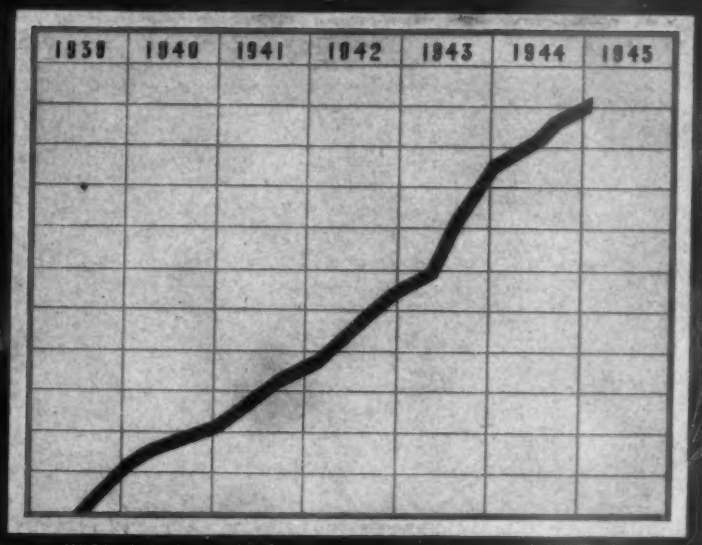

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companied by hurricane winds, caused more damage than the squadron had experienced in 11 months. Some of its men were killed, others injured, and some planes damaged. This correspondent was at XX Bomber Command headquarters during the storm, and witnessed the destruction. One C-46 was picked up and thrown against a building. This plane, which weighs 15 tons empty, was tossed through the air. There were no wheel tracks from where it had been parked to where it was found. Such a storm doesn't happen every day, but it gives some indication of the extent to which weather affects operations in India.

The Air Transport Squadron (Mobile) has done its share in making the Superfortress raids of XX Bomber Command successful.

France to Acquire 130 Transports By End of '45, Report

France will buy or build 130 transport planes by the end of the year, and present plans call for the operation of 100,000 kilometers of airlines throughout the French empire by mid-May, according to a Paris dispatch from the *New York Times*. The plans were disclosed at a French national aviation congress which opened in Paris last fortnight.

According to unofficial estimates, France will produce several thousand planes of all kinds this year. Most of this production will depend, this year at least, on the models and raw materials left behind by the Germans. German Junkers are already being turned out.

The French press is already discussing new French types that, it is hoped, may soon equal the Allies' best models. Among those mentioned is a two-seater 140 hp touring plane suitable for mass production, secretly planned by an aircraft works in Bordeau during the occupation; a four-motored transport for 24 passengers, with 1500 kilometers range at a cruising speed of 400 kilometers an hour, and a similar two-engine transport.

State Control Seen

Production will be strictly controlled by the State, the *Times* reports. Plans have also been made to have the State buy all the shares in Air France and other airlines in order to create a State monopoly.

The French plan to take full advantage of the legacies of German-built airfields, many of them expanded by the Allies. Plans are underway to expend eight billion francs, making the Orly airport outside Paris a fitting counterpart to La Guardia Field. Orly is to become the terminus of transatlantic lines, according to the plans.

At the national aviation congress, the French also revealed the strength of its new air force, described as "incomparably more powerful than it was in 1940." The new force is strong enough to insure air cover for the French First Army, which just crossed the Rhine. The force now has 159,000 men, many trained in the U. S., as compared with 85,000 just before the war.

Report From Canada

Too Much Regulation Threatens To Shut Out Smaller Operators

By AUSTIN F. CROSS

GROUNDED by book-keeping; that's the new threat to Canadian commercial aviation.

The only way to "keep 'em flying", to hear some private operators tell it, is with a good ledger keeper. As you might guess, the government wants too many answers. Big companies can take a bit of accounting in stride, but the Little Man of the Air is not just behind the eight ball; he's behind in his book-keeping.

"Yes, we admit you can operate planes, and we know your pilots are good, and you never had an accident" says the government. (Here we put it as the boys tell it.)

"But where is your Form XY 2? You didn't say how many man-hours you spent on that aileron? We must have more information about what you do with your left-over sludge?"

So it goes.

To be perfectly fair, the Canadian aviation industry is well aware that there must be some degree of regulation. They'll go farther and admit that the business can call for a lot of regulation. But they do insist that there is a straw, that last final straw, that can break the camels back, and there is that last ultimate regulation that can put a small operator out of business.

Right now, private aviation is making its appearance before the newly organized Air Transport Board. By and large, all goes well. The bigger companies have co-operated pretty fully with the A.T.B., are willing to do more. But the small fellows are not so sure how it will work out.

The big operators find the new rules generally acceptable. But they doubt if all the regulations as they at present stand will help. In fact, some air rules will hinder, rather than help, the establishment of small operators.

What really irks air companies is that after all safety hazards are duly regarded, after the financial structure is well endorsed the next order of business is one terrible heap of ledger-keeping.

It is also submitted that some of the reports sent in have to be duplicated, because more than one government department is involved.

Daily, weekly and monthly reports, say the Small Fellows, are going to get us down, and get our costs up. One firm dug up the fact that while small operators in the United States used to be able to operate at a cost of $10.78 per flight hour, it had now risen to $29.65 in 1943. Now then, Canadians have a right to be apprehensive. If, they reason, the efficient Uncle Sam, in a vast country, sustains a 200 percent increase in three years, what is going to happen to us Canadians? What indeed, we reiterate.

"Why do we have to do all this book keeping?" asks more than one small operator pertinently, if impatiently.

The public doesn't benefit, and the Air Transport Board can get any information it wants, on the spot, anyway. It has only to ask.

What they fear is that the bales of paper reports are to give the bureaucrats something to mull over on the one hand, and provide the statisticians with an endless series of field days, on the other.

Basically, air transport men feel, the idea of an Air Transport Board is to help flying, to make it easier, and above all, to promote the industry. Many a small man has no equipment, no capacity, no money, to give himself the additional overhead of a brace of book keepers. True, he can't function like an ignoramus either. He agrees that he can't keep the government entirely in the dark.

But there is a big job to be done in Canada yet. There are many areas where railways will never be built, and highways are still a quarter century away. These vast distances are accessible only by air. Bishop Fleming of the Arctic one time recalled that he flew from Aklavik to Edmonton, between sunup and sundown, on a trip that had taken him several months by dogteam, not so many years before. That's the air for you. The air makes minutes of hours, and hours of days. Meanwhile, Canada has a hinterland, where millions of dollars are still buried in the ground. Only the airplane can open up this country, exploit its wealth.

The railways got subsidies of all kinds, the steamships are provided with free canals and enormous privileges, and the busses, favorite children of transport, get free highways. The air, it would seem, is free only in theory. What keeps the air from being free, and makes it a costly business, is the enormous price that air operators must pay to get off the ground, and then to get back down again. The government could, therefore, afford to subsidize air.

Subsidies Not Sought

This subsidy is not something that private operators are seeking. They want to go it alone. But they do submit that if the frontiers are to be pushed back, and the enormous northland opened up, then the government must help the small fellows over a stile here and there. One way they can help is to lift that zero-zero ceiling of endless forms, daily reports, crucifying detail.

Mind you, this is just one side of the matter. The government can make out a good case, and doubtless will. Just the same, the government is a negative operator. It says yes or no, but in a sense doesn't help. The government takes a profit, win or lose, in taxes, doesn't lift a finger to get an operator going, can't lend a hand to keep a man out of the red. Where the government can help, however, say the small operators, is to call off their dogs, as far as multiple book keeping is concerned. They want a moratorium on forms to be filled.

Keep us in the air, not up in the air, seems to be their plea.

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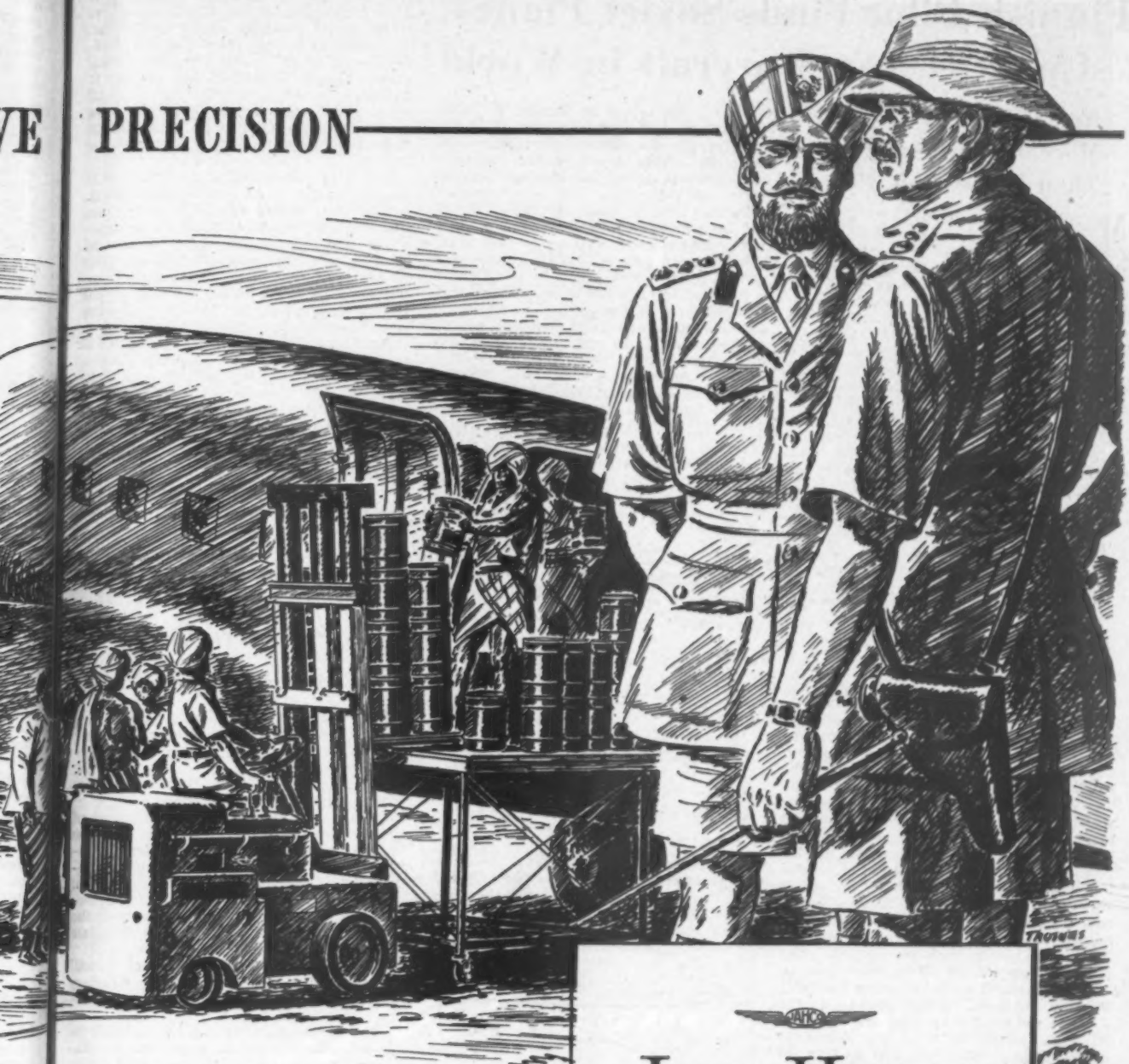

air-tight, water-proof seal. Where conventional packing was good for six months, Jack & Heintz canning protects for a minimum of two years . . . in steaming jungles as well as in sub-zero cold.

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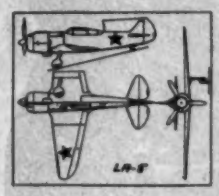
Finnish Pilot Finds Soviet Planes Good as Any Warcraft in World

New Fighter LA-7 More Maneuverable Than Focke-Wulf 190

MANY RUSSIAN AIRCRAFT are just as good as any other warplanes in the world, and at least one new fighter, the LA-7, is both faster and more maneuverable than either the Focke-Wulf 190 or the Messerschmitt 109, according to a lieutenant in the Finnish Air Force writing to the Swedish aviation publication, "Flyg."

Not much is known, he reports, about the newest Soviet Fighters MIG-5, JAK-11 and LA-7. However, the latter is in full scale mass production, and is said to be powered with a new 2000 hp engine. Claims of its superiority over the German FW-190 and Me-109 are based on comparative flight tests.

The LA-5, an earlier model from which the LA-7 was developed, has a span of 32 ft. 4 in., length 29 ft. and wing area of 189.22 sq. ft. Its weight empty is 6075 lbs. and loaded weight except for bombs 7385 lbs., giving a normal wing loading of 39.36 lbs. per. sq. ft. powered with a 1600 hp, 14-cylinder Type M-82 air-cooled radial engine, it has a top speed of 370 mph at 16,400 ft., 342-361 mph at 6500-13,000 ft., and 324 mph at sea level. Cruising speed is 218-250 mph and landing speed 94 mph. A 1640-ft. run is required for take-off. The LA-5 burns 95 octane gasoline and has a fuel capacity of 107 gals. in five tanks. Normal flying time is 2 hours—1 hr. 10 min. if at top speed. Armament consists of two 20-mm Shwak cannons mounted in the fuselage with 170 rounds of ammunition apiece, and four 110-pound bombs can be carried. The pilot is protected by .30-in. back armor.



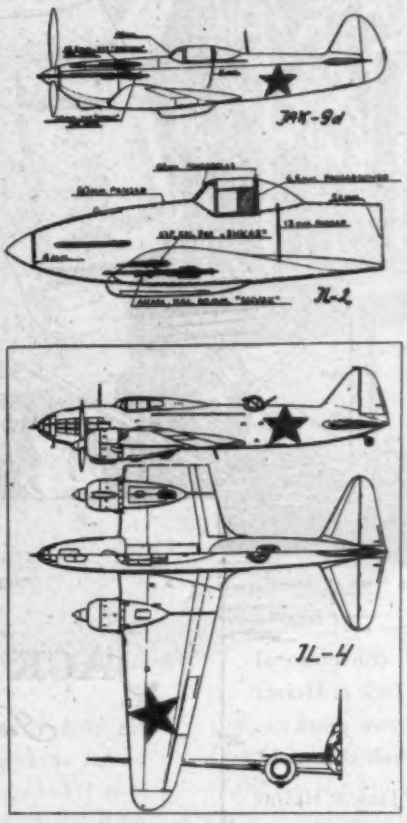
While there is no information available on the JAK-11, specifications of the JAK-9d, an earlier version, are: span, 33 ft. 4 in.; length 29 ft. 2 in.; maximum gross weight, 6625 lbs.; top speed, 373 mph at 16,400 ft., 330 mph at 6500 ft. and 311 mph at sea level; cruising speed, 224-232 mph at 16,400 ft., and 202 mph at sea level; take-off distance, 1300 ft.; climb time to 16,400 ft., 5-6 min.; ceiling, 33,000 ft.; and maximum flying time, 2 hrs. 50 min. The JAK-9d is powered with a 1000 hp Type M-105-PF engine, and has a fuel capacity of 106 gals. in four tanks. Armament consists of two 12.7 mm Berezina machine guns with 250 rounds each firing through the propeller and one 20 mm Shwak cannon firing through the propeller hub. A special tankbuster version, the JAK-9t, substitutes a 37 mm OKB-16 cannon with 30-35 rounds for the Shwak cannon.

Details of two Soviet bombers—the TU-2 and the IL-4—also were presented by the Finnish lieutenant. The former, which probably will replace the outmoded PE-2, has a span of 62 ft. 10 in., length of 46 ft., normal gross weight of 23,400 lbs. and overload gross weight of 28,420 lbs. Top speed is 348 mph, cruising speed 261 mph, landing speed around 100 mph, and allowable diving speed at a 75 degree angle 466 mph. The TU-2 is powered with two 1750 hp (take-off) Type M-82-NU 14-cylinder air-cooled radial engines and carries a crew of three or four men. It carries 616 gals. of gasoline and has a normal flying time of four hours. Ceiling is reported to be 36,000 ft. Armament consists of three movable 12.7 mm Berezine machine guns, one fixed Berezina gun in the tail, and two 20 mm Shwak or 23 mm VJA cannon firing through the propeller shafts. Ammunition includes 200-250 rounds for each machine gun and 200 rounds for each cannon.

The IL-4 is really an old DB-3f with a plywood nose and a strengthened fuselage and undercarriage. The latest version has two 1600 hp Type M-82 engines, but earlier models are powered with two 1100 hp Type M-88B engines. Span is 71 ft. 6 in., length 49 ft. 4 in., wing area 717.69 sq. ft., weight empty 12,078 lbs., normal flying weight 20,020 lbs, and overload gross weight 25,960 lbs. The normal wingloading is 27.68-29.73 lbs. per sq. ft. Top speed of the IL-4 is 277 mph at 22,310 ft. and 261 mph at 15,750 ft., cruising speed 186 mph at 22,310 ft., and take-off distance with normal load in excess of 2300 ft.

The IL-4 will climb to 16,400 ft. in 11 min. unloaded, has a ceiling of 30,000 ft., and a range of 1025 miles with long range tanks and 745 miles without. Fuel capacity is 850 gals. in six wing tanks, and 990 gals. with the long range tanks. This plane is heavy to fly and somewhat unstable. It will fly rather well with one engine inoperative, but the rate of climb is reduced to about 1.5-3 ft. per sec.

Armament consists of two movable 7.62 mm Shkas guns and one movable 12.7 mm Berezina on top of the fuselage, one movable 7.62 mm gun in the nose, and one movable 7.62 mm gun under the fuselage. Normal bomb load is 2200-5950 lbs., and either one 2000-lb. torpedo or one 2200-lb. mine can be carried. Both the pilot and top gunner are protected by .35-in. back armor. Radio equipment includes an RSB-bis sender-receiver and an RPK-2 direction finder.



Russian Progress—The two Sketches at the top show placing of armor and guns on the Soviet planes, JAK-9d and IL-2. The JAK-9d has 60 mm armor glass in the windshield, two 12.7 mm Berenzina guns and one 20 mm Shwak cannon. The IL-2 has 60 mm armor glass; 5 mm, 6 mm, 6.5 mm and 13 mm armor plate; 7.62 mm Shkas guns and 20 mm Shvak cannon. The sketch at the bottom shows the IL-4 bomber, a somewhat modified DB-3f.

Aviation Regulation By Non-Air Bodies Opposed by CAJLC

The Civil Aviation Joint Legislative Committee last fortnight adopted a report of a subcommittee opposing the regulation of aviation "by non-aviation bodies, such as State Public Utilities Commissions."

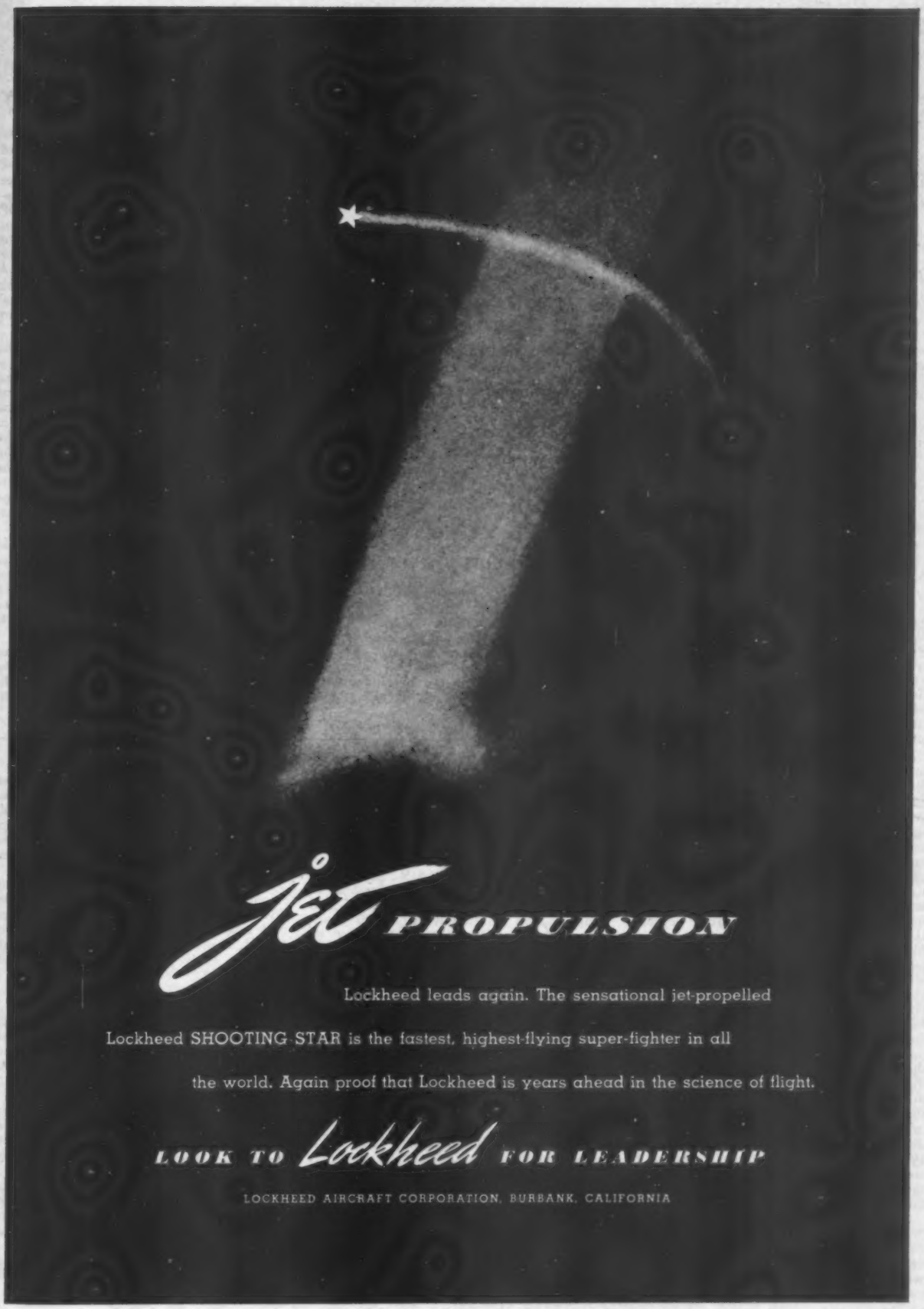
The committee, which is comprised of representatives from some 10 aviation trade associations, also expressed opposition to the adoption of economic regulations for non-scheduled flying "until there has been an opportunity to determine what sort of and extent of the aviation business there is to regulate economically."

The committee announced that it will meet again in Washington when hearings are held on the Lea Bill (HR 674), probably around May 1.

The subcommittee's report opposed the model aviation act sponsored by the National Association of Railroad and Utilities Commissioners, asserting that "it would be inadvisable to set up controls of aviation which stemmed from organizations whose business and experience had to do with existing earthbound transportation."

Such controls, the report said, "are certain to be prejudiced in favor of the long existing forms of transportation. The various NARUS bills which are being regularly introduced into state legislatures are evidence of this fact . . . There has already been ample evidence of the injustices and confusion brought about by legislation of this type in the great number of curbs placed on motor carriers and the wide variance of these controls between the states."

The subcommittee was composed of Joseph T. Geuting, Jr., William Redding and Howard Ailor.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Labor, Farm Groups Urge Inquiry Into Executive Air Pacts

The Senate Foreign Relations committee may yet be called upon to vote on the resolution introduced by Sen. Wallace H. White (R., Me.) which would require submission to the Senate for ratification of the so-called "Freedom of the Air" agreements growing out of the International Civil Aviation Conference held in Chicago last fall.

Pressure was being put on the Foreign Relations subcommittee which has been holding hearings on the International Civil Aviation treaty to influence the full committee to require the State department to submit for study all of the agreements growing out of the Chicago conference. The White resolution, which has laid on the table for some weeks, seeks to have the State department discontinue its negotiations with foreign countries for bi-lateral air commerce operating agreements until the Senate has passed on all issues of policy involved.

The White resolution goes even farther in that it would have the State department notify foreign countries that all acceptances should be withdrawn until such time as the Senate has made its decision as to whether the five freedoms agreement requires Senate ratification.

May Get Full Hearing

Agitation which may bring the broad issue before the full committee was developed before the George subcommittee by labor and farm groups which contended that the Senate should look into the so-called executive agreements with the idea of protecting labor and agriculture from the possible effects of low-wage competition abroad.

A. F. Whitney, president of the Brotherhood of Railroad Trainmen, and H. W. Brown, president, International Association of Machinists, (A. F. of L.) centered their attack largely on the executive agreements, voicing no particular objection to the ratification of the Convention itself. The Convention establishes the permanent international air organization and sets up the technical standards for international air operations. It will become the permanent organization as soon as 26 nations have signed the Interim Air Agreement which establishes the temporary organization.

Both of these witnesses, as well as Fred Brenckman, Washington representative of the National Grange, said they felt that U. S. sovereignty over its own air space was protected by the Convention but they held that the guarantees of the treaty itself would be by-passed if the Senate permitted the State department to "barter away" this country's rights through the "Two-Freedoms" policy outlined in Title III and the "Five Freedoms of the Air" in section V of Title IV. The Grange's opposition appeared to stem from its traditional opposition to the reciprocal trade policies of this administration.

Sen. Robert M. La Follette (Prog., Wis.) reminded the witnesses that the subcommittee had before it only the Convention itself (Title II) but assured the witnesses that the broader issues of policy contained in the bi-lateral agreements had received attention at the hands of the full committee.

It was indicated by Sen. Claude Pepper (D., Fla.) that the full committee might not take up the executive agreements if it found them to be "within the scope of the executive departments."

Sen. Owen Brewster (R., Me.) attempted to bring out in his questioning of Whitney that President Roosevelt had submitted an aviation treaty which guaranteed this country sovereignty over its air space while the State department, through the executive agreements, "annihilated that principle by proclaiming a freedom of the air policy." Whitney agreed. Brewster claimed that under the "Most Favored Nation Clause" 54 nations of the world could operate airlines to this country if they were signatories of the Convention even though but one nation had signed the so-called Five Freedoms agreement.

In an earlier appearance, Robert A Lovett, assistant secretary of War—Air, said that the proposed Chicago civil aviation treaty was "as satisfactory an agreement from the point of view of the United States as could be obtained."

He told the subcommittee that rights which are "particularly important to our national security" are adequately safeguarded in the treaty. He listed these as freedom to establish prohibited areas, to prohibit carriage of munitions by civil aircraft, and "freedom of action in time of war or national emergency."

"The War Department believes," Lovett said, "that adherence to the Chicago convention by the United States will greatly facilitate the establishment of a strong U. S. international air transport system and that adherence to it would be definitely to the national interest."

Sen. Brewster read excerpts from a confidential War Department document which advocated that only freedom of transit and non-traffic landings be proposed by the U. S. and that agreement be sought with the major air powers before an international conference was called.

Supposedly Confidential

Lovett replied that the document was supposed to have been kept in confidence and that it was written last October when the War Department was uncertain what the State Department would propose at Chicago.

"We are satisfied that our apprehensions have been cleared up," Lovett testified, and "we support the principle of freedom-of-the-air" as laid down by the U. S. delegation at Chicago.

He denied Brewster's charge that America had "bartered away" its rights saying that "connotes we are frittering away something." He said the Chicago agreements were in the "best interest of the country, that they do not impair military security and we hope to get the support of this committee."

More Veterans' Aid Urged

Thousands of veterans of the AAF whose individual aviation training has cost the government $20,000 or more, find that policy restrictions in connection with the G. I. bill of rights prevent them from obtaining the type of retraining needed to enable them to continue careers as pilots in modern air transport, according to J. Wendell Coombs, president of the Aeronautical Training Society. He declared that present requirements which grant only $500 tuition allowance for a school term of 30 to 38 weeks of a minimum of 25 hours are virtually valueless to veteran pilots who want to go into commercial flying jobs.

Large Scale Production of Jet Planes Promised

New jet-propelled fighters, torpedo planes and seaplanes are going into large scale production this year, Rear Admiral Dewitt C. Ramsey, chief of the Bureau of Aeronautics, told members and guests of the Wings Club at its second annual dinner in New York recently. New and replacement aircraft for the fiscal year ending June 30, 1946, he said, will cost $3 billion.

The new models, he said, will spearhead a Naval airforce which has already downed more than 10,000 Japanese planes in three years, with an air combat advantage of more than five to one. He added that the Navy has now launched a carried fleet of "nearly 100 units with an operating capacity of literally thousands of airplanes."

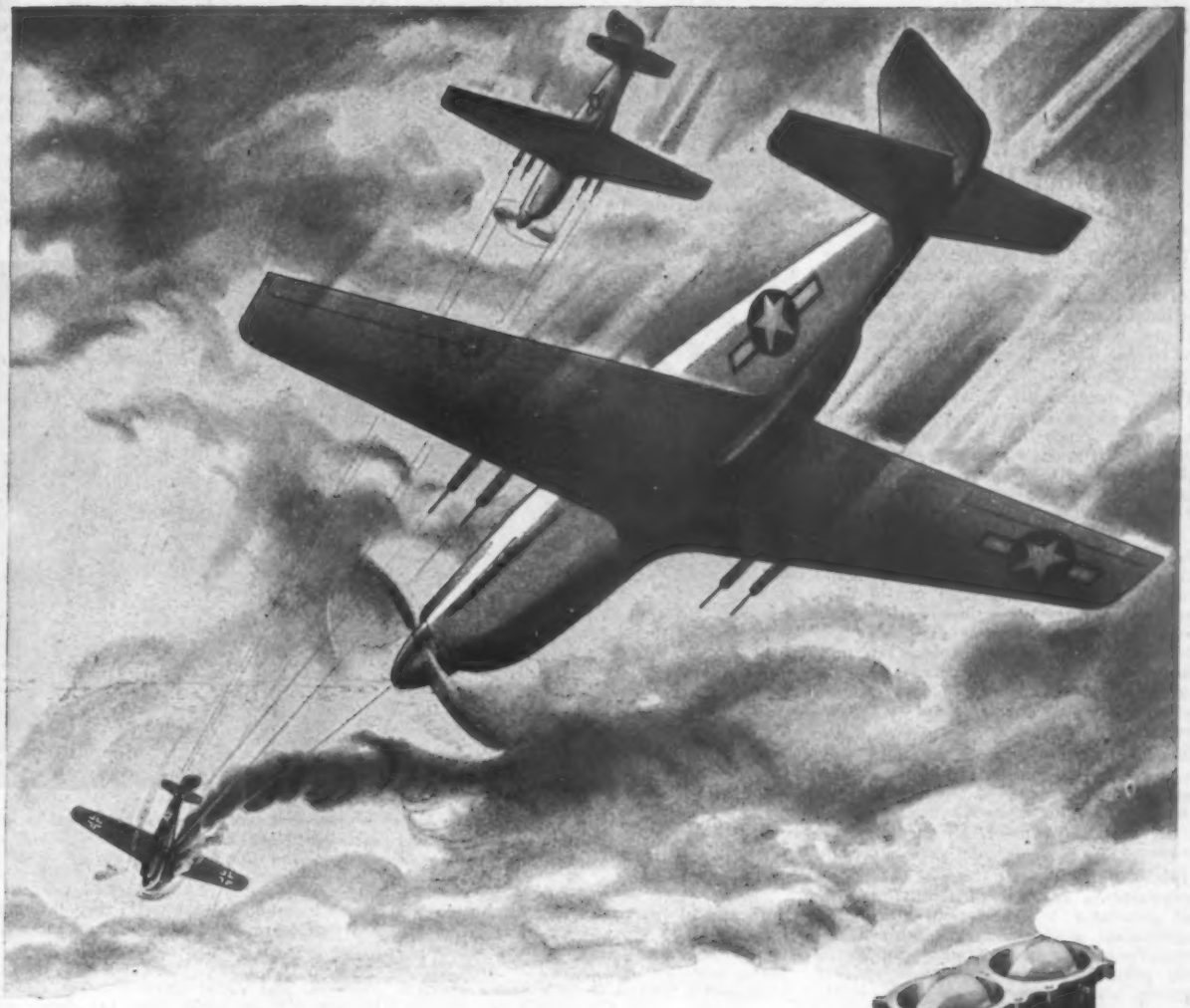
CAA to Service Test Approach Systems For Army, Navy

Two new approach control systems designed to increase reliability and speed into airports under instrument conditions are about to be given thorough service tests by the Civil Aeronautics Administration. One is the Army-Navy ADF system employing station locators for holding and letting down which will be installed at LaGuardia Field, and the second is a system developed by the CAA using fan markers as holding points which will be tried out at Washington National Airport. Both tests are expected to start about May 1.

The tests are being undertaken by the CAA at the joint request of the Army and Navy and the airlines through the Air Transport Association. Both systems utilize existing airborne equipment, and will require no additional installations in the aircraft. Ground equipment for the fan marker set up is already utilized by the CAA for other purposes, and the only change involved will be the relocating of the fan markers. Ground equipment for the Army-Navy system is now on order.

The Army has already employed the station locator system on its Presque Isle-LaGuardia Field route, and didn't miss a single schedule for the 90-day period ending March 15 despite some of the worst possible flying weather in several years.

Under the tests about to be conducted by the CAA, the two systems will be used by all aircraft landing at LaGuardia or Washington under instrument conditions.



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'Flying Machine Shop' Proving Vital Aid in ATC Operations

Made From Battered C-47, Once Believed To Be Beyond Repair

SOMEWHERE IN AFRICA—A "flying machine shop", which is expected to be of inestimable value in repairing planes that have been grounded in remote places, has just been completed by officers and men of Air Force General Depot 11, Air Service Command.

This "flying machine shop" is a Douglas C-47. It is a ship that was turned over to the depot in almost unrepairable condition. The depot, which had been looking for a ship to convert into a machine shop, received permission to keep the plane, and went to work converting it.

In Africa, where distances are great and ground transportation almost non-existent, planes grounded in out-of-the-way places present a major problem. Sometimes it is even necessary to write them off the books because of the impossibility of getting sufficient repair equipment to the spot. Where ground transportation is available, it is often weeks before repairs can be made.

Many engineering problems were encountered by the men of the depot as they began construction of their "flying machine shop"—how to distribute the weight in the craft, how much weight to carry, center of gravity, etc. all were solved.

Into the plane went over 4000 lbs. of equipment—a 24-volt "putt-putt", a 110-volt generator, a bench with a lathe, a combination workbench and cabinet, instrument test stand, hydraulic test stand, drill press, vise, air compressor, loading runners, arbor press, grinder, hoist, welding dolly, lathe tools, etc. Some of this equipment is removable and is not carried on all trips.

Upon entering the plane, one gets the impression that everything is out of proportion and balance. This is due to the fact that the workbench and lathe are installed so that they are level when the plane is on the ground. The lathe bench even has a hydraulic jack at its base, to level it up according to the amount of air in the plane's tires, to compensate for irregular grounds, etc.

The finished appearance of the plane's interior is remarkable. It might have been done at a factory in the United States—but it was done by Army sergeants. They went so far as to paint the interior in "two-tone," the top part light for better illumination, and the bottom dark. To top off everything, they even installed themselves a tiny "kitchen," so that warm food will be available while they are in the field.

Looking aft. In right foreground is lathe, on floor in center is engine hoist, and in left background is combination workbench and cabinet. Note two-tone paint job—top of aluminum paint, which increases illumination, and bottom in dark gray.

With this plane, the depot can do first, second, and some third echelon maintenance. (Jobs that can be done with hand tools, engine changes, plus even more complicated work. Fourth echelon maintenance is the most complete—major overhaul, etc.)

Shortly after completion of the plane, the depot received word that a P-38 was grounded at a distant point, in need of engine repair. The "flying machine shop" made its first trip, flying the distance in eight hours, completing the repairs, and returning to its base in slightly over one day. If ground transportation had been used, it is estimated the job would have required three weeks.

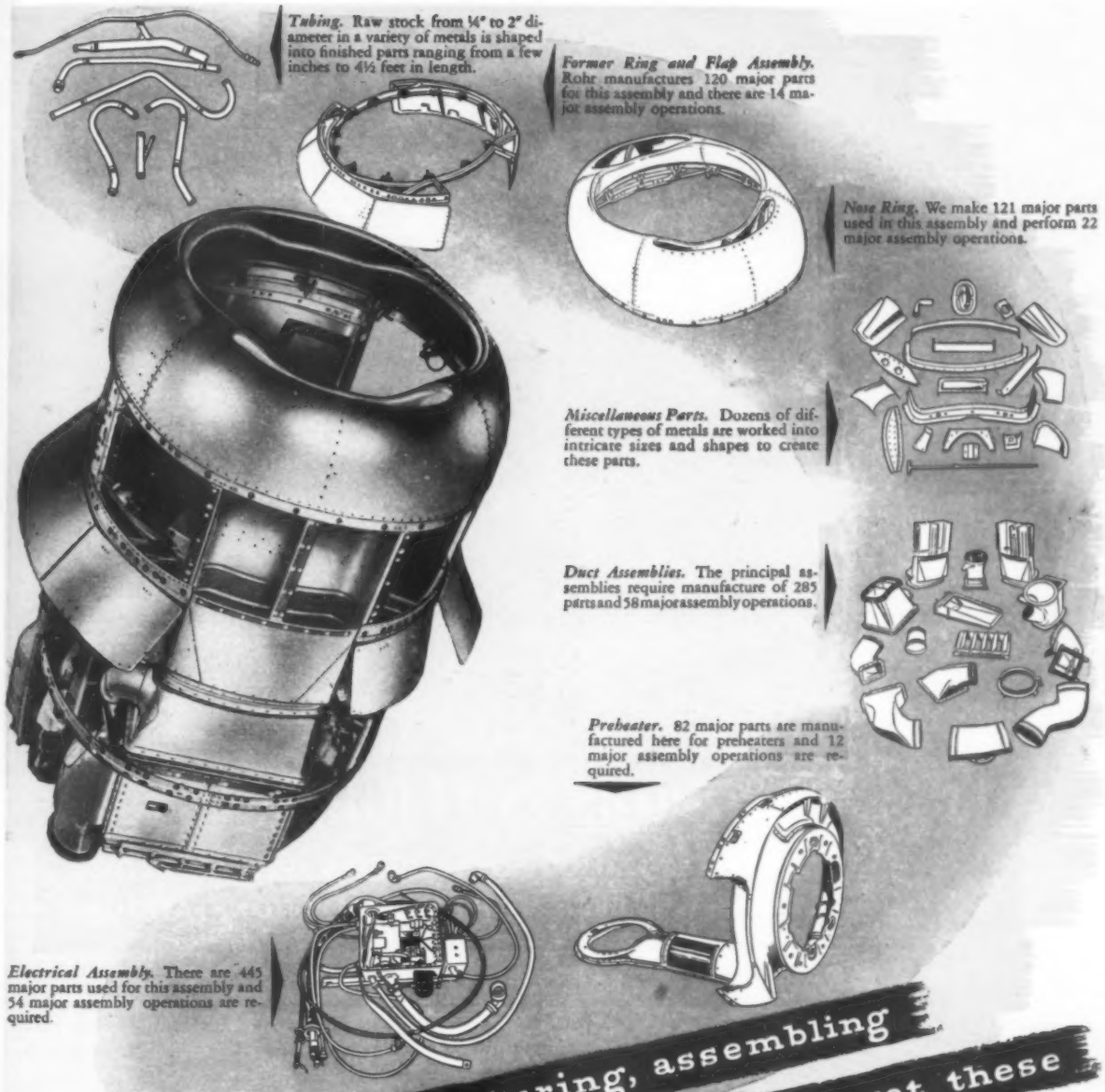
Work on the plane was started under Col. Monty D. Wilson, who was then commanding officer of the depot. Maj. Harvey Neald, depot engineering officer, worked on the project, along with Master Sgt. John Ayres, Tech. Sgt. James Key and Corp. James Randall.

E. B.

Looking forward. At left is air compressor, in center lathe, and in right background (formerly navigator's compartment) is combination workbench and sheet metal cabinet, which mounts a bench grinder and 1/4 inch drill press. At foot of lathe is hydraulic jack, used for both vertical and horizontal adjustment.

Prefabricated Shelter

A prefabricated servicing shelter in which Liberator bombers and other types of aircraft can be serviced when permanent hangars or docks are not available has been developed by engineers of Consolidated Vultee Aircraft Corp. The structure provides shelter for both plane and ground crew, and can be set up in 72 hours.



Tubing. Raw stock from ¼" to 2" diameter in a variety of metals is shaped into finished parts ranging from a few inches to 4½ feet in length.

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Burden Sees Boston Lagging on Airports

"Boston, like many other cities, is trying to walk into the air age on one leg, or perhaps I should say, fly in on one wing," William A. M. Burden, assistant secretary of commerce for air, declared in an address before the Aeronautical Association of Boston.

Burden pointed out that while Boston has made preparation for commercial aviation with larger airports, it had not done so with respect to smaller fields needed for the development of private flying.

"There is, according to our records, not one small private flying field within a reasonable distance of the great metropolis of Boston," he said. "This is truly an amazing situation when you consider the substantial amount of personal flying which even the most conservative estimates indicate will develop in a city of this size after the war."

On the basis of postwar estimates of private flying, there will be need for 60 airports in the Boston area, he said, adding that "unfortunately there doesn't seem to be any planning under way in the Boston area for six airports, much less for 60." Burden urged that "steps be taken at once to make Boston ready for participation in any federal-aid airport program which Congress may adopt."

Burden said that Massachusetts laws on a state level had been progressive, and reiterated the CAA's endorsement of the model aviation bills drawn up the National Association of State Aviation Officials.

In support of his prediction that there would be 400,000 civil aircraft in the United States 10 years after the war, Burden said the answer lay in national income figures. "There were more than 900,000 persons in 1941 reporting to the Treasury Department incomes of more than $5000 a year. . . . These people in the over $5000 income bracket are the potential owners of planes."

Burden said that the only reservation he would place on the 400,000 plane figure "is that the government must do its part in assisting the natural growth of aviation." These assists he named as an intelligent airport program, basic research contributing to more useful and popular planes, and a program of limited financial aid to civil flight training.

McCarthy Heads Tax Group

Joseph F. McCarthy, controller of United Aircraft Corp., has been elected chairman of the Eastern Regional Tax Advisory Committee of the Aeronautical Chamber of Commerce. T. R. Colborn, counsel for The Glenn L. Martin Co., was chosen secretary. Other Committee members are: Walter A. Mogensen, vice president and treasurer of Aviation Corp.; Capt. Harry L. Collins, vice president of Bell Aircraft Corp.; J. C. Willson, vice president of Curtiss-Wright Corp.; Webb Wilson, treasurer of Fairchild Engine and Airplane Corp.; Arthur A. Pieper, assistant to the president of Republic Aviation Corp.; Paul A. Reck, assistant general comptroller of Sperry Gyroscope Co.; and R. E. Hoefflin, treasurer of Waco Aircraft Co.

Luxury Liners for the ATC

Interior of the C-54-E Passenger Cabin Looking Forward

TWO NEW luxury airliners are now being produced by Douglas Aircraft Co. for the Air Transport Command. Designated as the C-117 and the C-54-E, they represent the latest passenger modification of the C-47 Skytrain and the C-54 Skymaster, and are fully equipped with reclining seats, soundproofing, reading lights and other conveniences found on commercial airliners.

The C-117 is in many ways similar to the commercial DC-3 with 21 seats and similar interior fittings, but has the somewhat heavier structure of the C-47 Army version. Much of this extra weight such as the heavy cargo floor has been removed, but according to Douglas officials, other members which can't be readily removed give it a slightly higher basic weight empty than the standard commercial version. The basic C-47 design meets CAA airworthiness standards, and with slight modifications such as the removal of glider hook-up equipment the C-117 would likewise meet them. However, it has not as yet been started on tests for type certification by the CAA.

The C-54-E is the first version of the Skymaster since the original C-54 to be delivered by Douglas equipped with reclining seats, although other models of the C-54 have been outfitted with seats, sound-proofing and other interior fittings by the Army and Navy after delivery. The present version has 40 seats and a large baggage compartment. Improved engines add 4,000 feet to its service ceiling and give it more speed at that altitude.

Like the C-117, the basic design of the C-54-E will meet CAA airworthiness requirements, although it, too, has not been started on tests for type certification. However, the only modifications which would be required before it could be started on such tests would be the removal of Army equipment such as radio and parachute flares, and the installation of such minor items as flashing wing lights.

Both the C-117 and the C-54-E are being equipped with a new light-weight seat designed by Douglas engineers which reduces the weight per 21-passenger plane by 147 pounds, and which costs but slightly more than half the price of the old type passenger chair. The new seat features a Douglas developed "Hydrolok" seat locking mechanism which is built around a simple hydraulic unit and permits instant and positive finger-tip control of the seat back. The new design also incorporates a quick-removable feature which permits the seats to be taken out in a very few minutes to adapt the plane for cargo use, with the floor fittings becoming light-cargo tie-downs. Dimensionally, the new seat is identical to the standard DC-3 passenger chair.

Constant Pressure Charts Will Be Used By Weather Bureau

The Weather Bureau will place in general use, probably by July 1, constant pressure upper air charts as a basis upon which to make weather forecasts and supply other operational data for the airlines.

The move is designed primarily to achieve coordination and continuity of weather maps on a global basis.

The constant pressure charts would replace the presently used constant level charts, which have been employed domestically for forecasting purposes. The Weather Bureau explained that the change-over is a purely technical one.

The constant pressure charts were developed by the Army, Navy and the Weather Bureau for world-wide combat and transport operations. The domestic airlines, through the Meteorological Committee of ATA, have expressed opposition to the change-over, on the grounds that operations in this country are accustomed to the use of constant levels.

Since the military services are using the constant pressure charts, the Weather Bureau has expressed belief that the general efficiency of upper air analysis will be increased if it also adopts this form of chart. The Weather Bureau will continue types of charts on its teletype system for spot weather reporting until 1946.

Number of Surplus Civilian Type Planes Sold Shows Sharp Drop

Over 100 Disposed Of Through FEA to Foreign Countries

THERE IS A DECREASE in both the number of civilian type planes being declared surplus and those being sold, figures in the latest Surplus Property Board report show. Only 271 of these planes were sold in February compared with 459 in January, while 370 were declared surplus compared with 459 in the first month of the year.

The February sales included 245 liaison planes, 15 single-engine cabin or utility cargo planes, two light and nine medium transports. By March 1, 10,550 civilian type planes had been declared surplus and 7284 of these had been sold. A large proportion of this total, 5360 planes, were used in the War Training Service and were sold by the Civil Aeronautics Administration as agent for the Reconstruction Finance Corp. More than 100 more of the civilian types which have been sold were sold to foreign countries through the Foreign Economic Administration. The remaining sales were handled by RFC.

By far the largest group of surplus aircraft are military types with little or no commercial value, SPB states. In February 838 military planes were declared surplus bringing the total to 21,904. The only sales of military types in February were 268 primary trainers and 16 gliders, the latter being useful as a source of spare parts for light planes. More than 7244 of the primary planes remain to be sold.

The following table lists civilian type surplus aircraft as of March 1:

	Type	Total Sold	Balance on Hand
Liaison—one engine			
Taylorcraft	L-2	834	551
Aeronca	L-3	791	213
Piper	L-4	84	262
Vultee	L-5	....	6
Interstate	L-6	110	78
Stinson	L-9	9	0
Ryan	L-10	1	0
Stinson	L-12	0	3
Stinson	GQ-1	0	1
Piper	NE-1	0	5
Stinson	SR-5A	0	1
Total		1829	1120
Utility Cargo—one engine			
Beechcraft	C-43	24	34
Fairchild	C-61	22	11
Noorduyn	C-64	0	3
Howard	C-70	6	4
Spartan	C-71	7	2
Waco	C-72	4	12
Cessna	C-77	0	2
Harlow	C-80	1	2
Stinson	C-81	9	15
Lockheed	C-85	1	0
Fairchild	C-86	1	4
Fairchild	C-88	0	1
Cessna	C-94	0	2
Vega	C-101	1	0
Rearwin	C-102	2	1
Grumman	C-103	1	0
Boeing	C-108	0	1
Fairchild	GK-1	0	9
Stinson	GQ-1	0	1
Fairchild	JK-1	0	1
Rearwin	NA	0	2
Stinson	SR-10	0	2
Stinson	ST-9	0	1
Waco	VKS-7	0	1
Total		79	111
Heavy Transport—two engine			
Curtiss	C-46	0	1
Medium Transport—two engine			
Douglas	C-32	0	3
Douglas	C-33	0	1
Douglas	C-34	0	1
Douglas	C-38	0	1
Douglas	C-47	0	4
Douglas	C-49	0*	15
Douglas	C-53	7*	88
Lockheed	C-56	0*	2
Lockheed	C-57	0*	2
Lockheed	C-59	0*	2
Lockheed	C-60	0*	44
Douglas	C-67	2	9
Curtiss	C-76	0	12
Curtiss	SM-72	0	1
Curtiss	SM-82	0	1
Sikorsky	JRS-1	0	4
Budd	RB-1	0	14
Douglas	R2D-1	0	1
Total		9*	205*
Light Transport—two engine			
Douglas-Dolphin	OA-4	1	0
Grumman	OA-14	1	1
Lockheed	C-35	0	1
Lockheed	C-36	0	4
Lockheed	C-40	1*	6
Beechcraft	C-45	0	2
Cessna	C-78	4	1774
Lockheed	JO-2	0	1
Lockheed	R-30	0	1
Total		7	1790
TOTAL		1924	3227
		Total Sold	Balance on Hand
Other Civilian Types Used in War Training Service		5360	39
Total Civilian Types		7284	3266

* Most of these have been allocated to domestic and foreign airlines. Some of the balance cannot meet CAA requirements for commercial operation.

RFC Disposal of Surplus Planes Denounced by CAA Committee

A CONDEMNATION of the practices of the Reconstruction Finance Corporation in disposing of surplus aircraft has been presented to Guy M. Gillette, chairman of the Surplus Property Board, and Fred M. Vinson, Federal Loan Administrator, from the new CAA Non-Scheduled Advisory Committee. The RFC method of disposal is "unfair in its concept, uneconomical in its operation and objectionable in its fundamental basis of engaging the Government in a business directly competitive with established private industry," the Committee's resolution stated.

The Administrator of CAA was urged by the Committee "to initiate a program whereby the established and organized sales facilities of the industry be utilized in the disposal of only such surplus aircraft as are certifiable with or without moderate repairs and alteration."

Criticism was directed, in particular, toward a series of advertisements appearing in 840 papers throughout the country which stated in part:

"Government Planes Now For Sale—Surplus Property Available April 6, 1945—$875 to $2400 depending on condition—Average Cost new to Government approximately $9000—Approximately 3000 Primary Trainers Meeting Rigid Army and Navy Specification Offered For Sale on a Price-Tag Basis by RFC."

Committee members labeled the advertisement "misleading," pointing particularly to the phrase "Meeting Rigid Army and Navy Specifications."

"This sounds as though you could get right in the plane and fly it away," one member said. "A lot of people who buy these planes will be shocked to learn they have to put another $400 or $500 into the plane to bring it up to CAA specifications."

RFC spokesmen assert there is no intention to mislead the public. They point out that the "price tag" on each plane contains the following statement: "Attention is invited to CAA regulations, directives and bulletins, compliance with which is considered necessary for maintaining the air-worthiness of any aircraft. Current information applicable to any particular aircraft may be obtained at the RFC office at (name of city)."

The price tag also warns that RFC makes no representation as to the condition or certificability of the planes and that certification is the responsibility of the buyer. It directs the buyers to the proper parts of the Civil Air Regulations on requirements for certification.

Announcement of the 53 sales centers throughout the country where 3000 surplus primary trainers may be purchased was made by Vinson. Vinson stated "For the first time surplus primary trainers can be purchased at a fixed price, each plane with a price tag. These trainers are adaptable to personal flying, fixed-base operations, training and certain miscellaneous uses. Actual prices have been based upon the condition of each plane."

The 53 sales centers are: Arizona—Phoenix, Wickenburg and Tucson; Arkansas—Pine Bluff and West Helena; California—Ontario, Hemet, Blythe and Concord; Colorado—Dupont; Florida—St. Petersburg; Georgia—Augusta, Americus and Douglas; Illinois—Lansing; Iowa—Des Moines; Kansas—Wichita; Massachusetts—North Grafton; Michigan—Lansing; Minnesota—Minneapolis; Missouri—Cape Girardeau, Sikeston and Robertson; Montana—Helena; New Jersey—Readington; Nebraska—Omaha; New Mexico—Albuquerque; New York—Albany; North Carolina—Charlotte; Ohio—Akron; Oklahoma—Oklahoma City, Ponca City and Muskogee; Oregon—Troutdale; Pennsylvania—Pittsburgh; South Carolina—Camden and Bennettsville; South Dakota—Huron; Tennessee—Jackson and Union City; Texas—Fort Worth, Lamesa, Fort

(Next page)

Stockton, Cuero, Vernon, Stamford, Corsicana, Ballinger, and Huoston; Utah—Salt Lake City; Virginia—Alexandria.

Vinson said the sales would virtually put the planes in the average man's backyard for inspection. "Since these planes extend an appeal to many persons who are planning to fly—and have already studied flying—it is felt that the price-tag system will assist them in finding the planes within the money range acceptable to them," Vinson said. "They can see the plane, examine it, note its condition and then more easily and more quickly decide on the matter of purchase."

Spokesmen for some operators, however, believe RFC is basing its sales policy and advertising on the unwarranted assumption that "The average man, who has a private pilot's license, knows exactly how much it will cost to repair the plane he buys from RFC."

In a report on the disposal of surplus aircraft, the Office of War Information states that surplus Property Board is "guided by the conviction that preservation of American leadership in aviation in the postwar world depends to a large degree on the controls exercised in the handling of surpluses." The Non-Scheduled Committee stated in its resolution that far from living up to this objective, RFC is "seeking to establish itself as a sales organization" in competition with and to the detriment of private business."

Chinese to Study Aviation in U. S.—Five of a group of 43 chinese, who will study aviation in the United States under the auspices of the Foreign Economic Administration with the advice of the Civil Aeronautics Administration, have arrived in Washington. They are shown with officials of the CAA and the International Training Association, which will supervise the studies. Left to right: Liu Chih-Kwang, of China's Civil Aviation Department; J. A. Bristow, manager of the Far Eastern Department of the ITA; A. S. Koch, CAA Assistant Administrator; Alfred Hand, CAA consultant; Liu Mou-Che, Chinese structural and flight engineer; Hsu Shou-Peng, administrative assistant with China National Airlines; Ho Feng-Yuan, student of airline administration; and Loh Shiao-Pin, who will study powerplants while in the U. S.

Change in Air Travel Conditions Cause of Discount Suspension

The Civil Aeronautics Board ordered suspended for 90 days the operation of discount tariffs on the Universal Air Travel Plan and government travel which all of the domestic airlines were to put into effect March 25.

The CAB called for hearing, announced that its action was predicated on the fact that the discounts contained in the tariffs "may or will be unjust or unreasonable, or unjustly discriminatory, or unduly preferential, or unduly prejudicial" and held further:

"That the rights and interests of the public may or will be injuriously affected thereby, and it being the opinion of the Board that the effective date of such discounts contained in said tariffs should be postponed pending hearing and decision thereon . . ."

The tariffs, as filed by M. F. Redfern, secretary of the Air Traffic Conference and agent for the 16 airlines named in the order, called for five percent discounts on both the air travel card plan and government travel.

It was understood that the Board's action was prompted by the fact that air travel conditions have changed since the air travel plan was originally approved in 1942. At that time the air travel cards carried a 15 percent discount as did government travel on government transportation requests. The airlines later dropped the discounts as a wartime measure.

It was pointed out that the discounts on one-way tickets to holders of air travel cards would give them cheaper transportation than that sold to a passenger who paid cash for a ticket, thus setting up a discriminatory situation.

It was also noted that the airlines utilized the air travel plan as an advertising scheme, and that such promotion was no longer necessary.

The Board in its order stated specifically that the hearing proposed would concern the lawfulness of the discounts as stated in the tariffs filed by Redfern.

Airlines named in the Board's order were American, Braniff, Chicago & Southern, Colonial, Continental, Delta, Eastern, Inland, Mid-Continent, National, Northeast, Northwest, Pennsylvania-Central, Transcontinental & Western Air, United and Western Air Lines.

Patterson Preparing Contract Conversion To Fixed Price Basis

Under Secretary of War Patterson has advised the commanding generals of the Army Air Forces and the Army Service Forces to set up a plan under which all cost plus fixed fee contracts would be converted to a fixed price basis. No definite date was specified by which the contracts would have to be converted, and it was understood that the amount of time allowed for the conversion would vary according to the conditions of various companies and contracts. However, it was provided that any contracts which are not converted within the time established for that particular contract in the plan to be submitted will be terminated and renegotiated on a fixed price basis.

Three exceptions have been made to the general conversion order. These are new research, experimental and developmental contracts, government-owned plants, and service contracts such as modification centers.

Budget Bureau Estimates Naval Aeronautics Will Need 2½ Billion in '46

The Bureau of the Budget has submitted to Congress estimates of $2,572,298,000 for use of the Bureau of Aeronautics, Navy Department, for the fiscal year 1946. The amount appropriated for 1945 was $4,600,640,000.

The items in the budget estimates include $799,128,500 for new construction and procurement of aircraft and equipment, spare parts and accessories, including expansions of and facilities in public or private plants; $177,658,200 for replacement navigational and radio equipment for aircraft in service, aerological photographic, and miscellaneous equipment, including repairs thereto; $1,514,238,800 for maintenance, repair, and operation of aircraft factory, air stations, fleet and all other aviation activities; $81,272,500 for continuing experiments and development work on all types of aircraft.

It is further provided that the $2,572,298,000 shall constitute one fund with a proviso that the unobligated portion of the contract authorization under "Aviation, Navy, 1945" shall remain available until June 30, 1946 together with unobligated portions from previous appropriation bills.

Air Promotion in Nevada

A state-wide organization to promote aviation in Nevada has been organized, temporarily named Nevada State Airmen, and has a membership of pilots, plane owners, mechanics, airport and school operators. First formal meeting will be May 16 in Reno. At this time, election of officers, ratification of by-laws and organization, and decisions of permanent nature will be enacted. Carl F. Johnson, pilot and owner of an instrument school in Reno, is serving as chairman for the session.

RCA

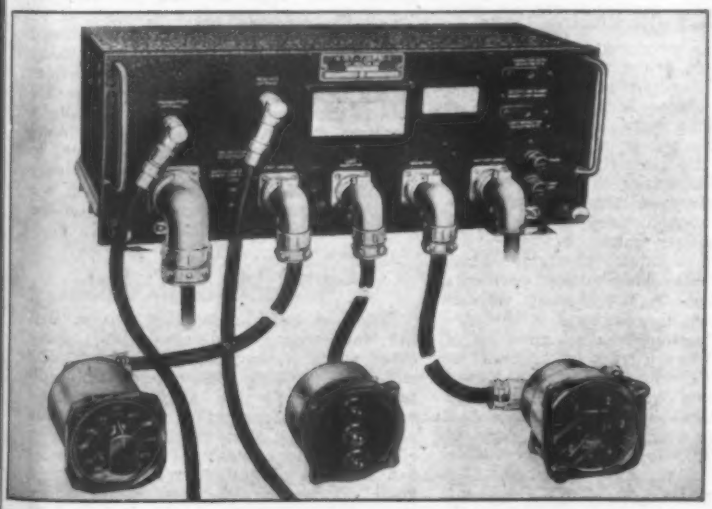
1. Pilot sets optimum height by turning knob on altitude-limit switch

2. Amber light indicates maintenance of correct height; red indicates too low; green too high.

3. Dial provides reading of height in feet.

Radio Altimeters in the AVENGER

THE HEIGHT from which a torpedo bomber drops its torpedoes is critically important... too high and the "tin fish" will "dive"... too low and it will "porpoise." With an RCA Radio Altimeter, the problem of holding correct height has been simplified. The provision of pre-set, altitude-controlled warning lights makes it possible for the pilot to concentrate on flying toward his objective without the necessity for constantly watching the usual altimeter indicator needle.



The RCA Radio Altimeter used in the Avenger is a type designed especially to read accurately at low levels. Its ability to do this, plus the feature of indicating immediately any deviation from optimum height, has contributed substantially to the high percentage of successful hits on the Japanese Fleet by Navy Avenger pilots.

There are other models of the RCA Radio Altimeter for other requirements. In fact, ALL of the radio altimeters used today by the Army, the Navy and the British were designed and first produced by RCA. Moreover, these altimeters are but one of the wartime contributions of RCA research and engineering. Others will be disclosed when security permits.

After the war, these RCA developments will find their place in commercial and private aircraft—to help make peacetime aviation safer, more reliable and more economical.

BUY MORE WAR BONDS

RCA

RADIO CORPORATION OF AMERICA

RCA VICTOR DIVISION · CAMDEN, N. J.

'Radioman Needed in All 4-Engine Crews'

Flight Radio Officer Takes Issue With Author-Pilot Spencer's Suggestions

By OTTO H. SCHMIDT

IT WAS with interest that I read an article in the November 15th issue of *American Aviation* entitled '4 Engine Domestic Plane Needs Crew of Three' by F. A. Spencer. We, of the profession of flight radio officers, feel that there is more to be told on the story of the size of the crew of four engine postwar aircraft. I predict that this type of aircraft will ultimately carry, in addition to any other basic crew requirements, a flight radio officer. This will be brought about by one or all of the following factors:

Schmidt

1. Safety
2. Public convenience and necessity
3. Filling a need as a vital crew member
4. Combination duties other than radio

The seagoing radio officer took approximately 10 years to convince the traveling public and the steamship owners that a radio officer was not only desirable but absolutely necessary, as a crew member aboard a vessel of any size, sailing in either coastwise or foreign trades. It was only after insurance rates were lowered in maritime circles for vessels carrying radio officers that the steamship companies began to realize the value of communication aboard these vessels. It would be practically impossible to calculate the savings both in property value and human lives that the addition of this crew member effected. Insurance, of course, will be no incentive to the air carriers. However, I believe that the traveling public, if not at the outset, will eventually demand efficient two-way communication air-to-ground, which is not contingent upon the pilot being free to so communicate in the event of emergency or distress.

2-Way Public Communication

When de luxe service is again restored to the full peak of American ingenuity after the war is over, I am sure that the traveling business man will demand the privilege of public correspondence at his airline elbow just as the railroads plan to have this service at his Pullman seat. The pre-war airline passenger no longer felt that meals served aloft, cigarettes, gum, flight library and other items of passenger service were a concession on the part of the airlines. They had grown to feel that this was a part of their service and, if two-way public communication could be available technically, rest assured they will demand this service.

I have flown in transoceanic service in various routes for many years and have yet to find a captain of any four-engine aircraft who is sold on the elimination of the flight radio officer. I have made it a point to obtain their views on this matter of domestic postwar four-engine aircraft and it is the consensus of opinion that the flight radio officer will be a very vital member of any proposed four-engine crews, in any service. If for no other reason, a flight radio officer should be carried aboard this type of aircraft so that, in the event of emergency or distress when the pilot personnel of the aircraft are rather busily engaged, as they will be, one member of the crew may be free to advise ground personnel of the nature of the emergency or distress and the position of the aircraft. Then, in the event an accident is unavoidable, the search and rescue parties may save valuable time in reaching the scene. The airlines faced the safety problem squarely a few years ago, so there seems no apparent reason why we should dodge this issue now.

Needed to Report Accidents

While loss of life in crashes is always the most unfortunate aspect in any airline accident, the self-insured equipment must not be forgotten nor should we pass over lightly the reputation and prestige of the carrier involved in any accident. Most of the airlines of today are competing with each other in increased maintenance and airplane service without regard for cost, yet in the case of accidents where pilot personnel did not survive and no true picture of the cause of the accident is ever reconstructed, they are at a loss to prove that the cause of the accident was not preventable. The history of the airline accidents of the past few years might have been appreciably changed had there been a communications officer aboard the aircraft, available at the time of the emergency to inform ground personnel of the exact nature of the difficulties being encountered so that preventative measures might be taken for any recurrence of similar accidents. When you recall these unfortunate accidents and realize that, in many cases, veteran pilots have been in command of the aircraft and undoubtedly called upon all of their skill and every trick in the trade to prevent the accident, it seems so logical that, if someone were available to keep ground personnel informed of what had happened and what was being done to remedy the trouble, perhaps succeeding crashes might never have occurred.

The flight radio officer, flying for the most part today in semi-military aircraft is a far cry from the "brasspounding," dot-and-dash man of early wireless He is an intelligent individual, well-trained in his profession, and is making that profession more respected every day by his increased education in allied lines. In the contract carrier operation of today, the flight radio officers of one carrier, at least, are required to be proficient in celestial and other navigation duties when they reach their senior grade so that, in the final analysis, we have a topnotch flight radio officer capable of doing an emergency job of navigation should the necessity every arise. Many of these men are now capable navigators and many more will qualify before four-engine aircraft are engaged in commercial use. If the airlines plan great circle routes off the civil airways in their non-stop, coast-to-coast service, what would be more logical than to have a flight radio officer capable of performing the duties of a navigator aboard to fill this important spot in the perfect crew combination?

While we realize that the life-blood of airline revenue is tied in with weight and it perhaps would be economically unsound to force the carrying of a radio officer aboard two-engine aircraft at the present time, with the increased payload possible with four-engine equipment we believe the apparent loss in revenue would be justifiable. If the weight of all the radio equipment is already aboard the aircraft, it certainly seems "penny wise and pound foolish" for the airlines to try to economize on the average 240 lbs. of crew weight necessary to place a qualified man aboard this aircraft, making it possible for the pilot personnel to devote all of their time to the highly skillful job of getting the aircraft off the ground, through the air and safely on the ground at their destination.

Captain Likes Pilot's Seat

There is talk in aviation circles that the four-engine equipment will carry three pilots, a master of the aircraft who will be a veteran senior pilot who will not actually fly the airplane but who will have another senior pilot as active captain and a first officer acting as a co-pilot. The contrast of the captain of the airliner of the future is hardly a good comparison to the master of a steamship in command of a crew of 40 to 50 persons. I doubt very much whether the pilots, themselves, will seriously consider a crew arrangement of this kind, for an active flying captain will sit nowhere but on the left-hand side of the airplane where he can take over the airplane for which he is responsible.

The progress being made in electronics, communications and their application to

22 Years in Radio

Otto H. Schmidt has been professionally engaged in radio operating since 1923. This work has included Army and Navy operating, broadcasting, Merchant Marine and, for the past 10 years, airline radio operating. He has been a Flight Radio Officer in trans-Atlantic service for the last two years. Schmidt is president of the Air Line Communication Employees Association, representing ground and flight communication personnel of American Airlines, Braniff Airways, Mid-Continent Airlines, and Northwest Airlines.

The Birdmen's Perch

By *Major Al Williams*, ALIAS, "TATTERED WING TIPS"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

LET'S HAVE AN UNDERSTANDING!

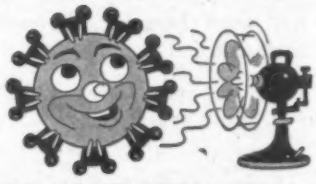
The Little Known Facts About Well Known Planes Dept. is good! It's interesting, informative, and entertaining. That's because the Little Known Facts you fellows send in are interesting, informative, and entertaining. For which we thank you prettily—and commission you Perch Pilots (bottom rung) . . . ***BUT . . .***

We are beginning to think that there's a certain subversive element out to get us! Saboteurs whose motto is "Wipe Out Williams!" We suspect they are trying to slip a Little Known Fact into the Perch that'll maybe get us thrown out of aviation forever.

A letter from Mass., tells about a certain British ship with a landing-flap arrangement which is "connected to the airstream!" (What do they use, rivets?) Another fellow writes about the "R5D Consolidated Coronado (the freight-hauling version of the Liberator)."

Well, the R5D is the "Skymaster". . . the Coronado is a PB2Y . . . and neither of them has anything in common with a Liberator!

So will you be a little more careful in checking your Little Known Facts?



SOME FAN, EH KID?

An engine maker wasn't satisfied with the cooling of his power plant.

His solution was simple—he added a fan to cool the engine! Result was an increase in the rate of climb, high-altitude performance, cruising speed, and gross load of the planes in which the engine has been tested.

An oil refiner wasn't satisfied with the refining of lubricating oils.

His solution was simple—he added a step to the refining technique which virtually refined oil *which had already been refined!* Result was a decrease in the amount of carbon-forming and sludge-making fractions left in the oil.

Effect was more actual lubrication from a quart of oil.

Name is Gulfpride.

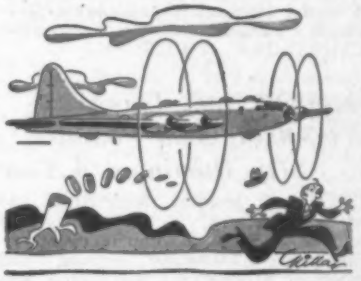
Maker is Gulf.

Try it!

Now here's a fact that Flutter dug up: In one day's fighting, a heavy tank will burn 500 gallons of gasoline! See why you oughtta buy an extra War Bond this month?

LITTLE KNOWN FACTS DEPT.

Arnold Paulson of Wallace, So. Dak. becomes this month's first Perch Pilot (br) with:



B-29 props have a greater span than the wing-span of some small airplanes, one of which had a wingspread of 12 feet!

Joseph Donaher, 69 Rockdale St., Mattapan 26, Mass., wins his commission with:

To fool observers, false propellors were attached to the P-59 (JP job) when it was moved from the factory to the testing area!

We hope we won't have trouble with the Army for the following promotion: Pvt. D. H. Kenyon, 435 Bomb. Sq. (VH), 333 Bomb. Gp. (VH), Army Air Field, Great Bend, Kansas, is hereby commissioned a Perch Pilot (br) for:

The heaviest items on the B-29 are not engines, or radio equipment, or armament—but the rivets, bolts, screws and other fasteners, which weigh more than all the engines together!

Gulf Oil Corporation and Gulf Refining Company...makers of

GULF AVIATION PRODUCTS

OIL IS AMMUNITION—USE IT WISELY

the airline industry is beyond the wildest dreams of aviation enthusiasts of a few years ago. The equipment that is still on the secret list of our military forces may well revolutionize the part radio is to play in making aviation safer in the years to come.

It is not the purpose of this article to bring any discredit upon the profession of flight engineers. If the carriers feel that a flight engineer is a necessary crew member and this opinion is shared with the captain and pilot personnel, then we have no quarrel on that score.

Summing it all up, as we see it, if the addition of flight radio officers to domestic four-engine crews can materially increase the safety factor of this equipment through intelligent handling of emergency communications and by this sole duty make it possible to prevent future accidents of a similar nature, then this added expense, through increased cost and hypothetical loss of revenue, is justified. In addition to this, if he can relieve the ever-increasing duties of the pilot personnel by furnishing weather and radio fixes; if he can improve the de luxe service of the airline by providing two-way service with the ground for passengers, then he has not only justified his existence in the crew but begun paying dividends as a valuable member of the crew.

Army and Navy Using 1,700,000,000 Pounds Of Aluminum A Year

The aircraft program, both Army and Navy procurement, is consuming aluminum products at an annual rate of approximately 1,700,000,000 pounds, and magnesium products at an annual rate slightly in excess of 85,000,000 pounds.

This was the information which was given before the Senate Special Committee on Small Business March 28 in a joint statement by Brig. Gen. F. M. Hopkins, Chief, Resources Division Office, War department and Rear Adm. E. L. Cochrane, Chief Bureau of Ships, Navy Department.

These military leaders listed three postwar musts with reference to these metals. They were: 1. There must be a peacetime demand for those materials sufficient to promote aggressive development in their production and use. 2. There must be maintained a means of accelerating their output with great rapidity if industrial mobilization on an all-out basis is ever again necessary. 3. There must be no exhaustion of our domestic bauxite deposits, for that might well make it impossible for this country to produce the weapons which would be required to meet a future national emergency.

Admiral Cochrane stated that the average aircraft carrier requires 2,000,000 pounds of aluminum in its construction.

New Stalling Speed Rules

New suggested manual changes governing increases in the stalling speed of commercial transport aircraft have been circulated to the industry for comment by the Civil Aeronautics Administration. The CAA's concern with permitting higher landing speeds, which would permit higher wing loading, is primarily one of safety.

Helicopter Market

One immediate market for helicopters will be state governments, according to the official of one state which already is planning to request legislative purchase of a fleet of the machines for use by fish and game wardens, health department and other agencies. The idea would be to operate a state helicopter garage and keep professionally trained pilots on hand for flexibility of use in the same way that the same state now maintains a fleet of autos. Despite expected relatively high price for first postwar helicopters, this official says their use will be economical and actually save money over conventional planes or autos.

Limit on Number of Gas Grades Needed More Than New Super-Fuels

Airlines will be less interested in the so called super-fuels after the war than in a limited number of grades of gasoline which economically would satisfy varying operating needs, G. K. Brower, American Airlines, told a symposium on aircraft fuels at the Aeronautical Meeting of the Metropolitan Section, Society of Automotive Engineers, in New York April 5. He said he expected that by 1945 air transport operators alone will be paying more than 70 million dollars annually for fuels and lubricants, and that each penny per gallon change in fuel prices was estimated to make a cost difference of about five million dollars a year.

Earle A. Ryder, Pratt & Whitney Aircraft Division, United Aircraft Corp., reported that 91 octane gasolines are generally satisfactory for domestic airline operations. He pointed out that more costly fuels would be satisfactory only if, by reducing fuel consumption, they simultaneously permit increased payloads. He warned that the use of super-fuels could prove impractical by shortening engine life and reducing safety factors.

Dr. R. T. Goodwin, Shell Oil Co., asserted that fuel suppliers, like airline operators, desire to limit the number of grades of gasoline. He proposed a maximum of five grades as satisfactory for every type of plane, suggesting 80 octane for light and medium aircraft, 91 for regular use, and 92 or 93 for special use, in commercial planes engaged in main or feeder line operations, 100 octane for military uses, and a possibly higher grade for long-range trans-oceanic flying.

Advocating the use of automatic or controllable variable pitch propellers on light aircraft, John D. Waugh, Curtiss-Wright Corp., Propeller Division, described the results of tests to show that such equipment substantially reduces take-off runs, and increases service ceilings and rates of climb. He said the equipment also contributes to safety, reduces operating costs, and improves plane performance.

DON'T Fence Them In

THERE's a lot of space in the Heart of America . . . thousands and thousands of acres producing millions and millions of dollars worth of grain, iron, meat, hides, fur, lumber, sugar and salt . . . basic things. There's millions of people, too, doing the work to produce those things . . . but they're fenced in . . . sorta. You see they can't get from where they are to where they want to go, easily, quickly, conveniently, inexpensively. And these people *must* go where they *need* to go, to keep the "Heart Market" strong and able to compete for trade. That means more *direct* transportation to more adjacent primary markets and that's where Mid-Continent comes in . . . for although it serves this vast inland empire well it will *fully* serve only when it expands and goes direct to markets it needs to connect . . . for the people who need the connection. *Let's not fence them in* . . . even a little bit.

•

Frequent Daily Service to:

KANSAS CITY	OMAHA
TULSA	ROCHESTER
MINNEAPOLIS	DES MOINES
SIOUX CITY	ST. LOUIS

JOPLIN

MID-CONTINENT AIRLINES

Over Nature's Flyway

Financial Gains Shown By Airport Owners In '38, '39, '40, CAA Finds

A survey of 1,048 airport owners compiled by the CAA for the years 1938, 1939 and 1940, shows an improvement of 1.24% in the financial condition of these operators for the comparable years.

A similar survey among fixed-base operators showed that 4.58% showed a decrease in profits between 1938 and 1940. The survey covered 1.379 operators in 1938, 1,500 in 1939, and 1,759 in 1940.

The survey among airport owners for 1938, showed these results: 33.11% reported a profit, 47.9% a loss, 1.62% broke even, and 17.37% did not report on this item. For 1939 the figures were: 34.16% reported a profit, 44.66% a loss, .76% broke even, and 20.42% unreported. For 1940, the figures were: 34.35% a loss, 40.65% a profit, .48% broke even, and 24.52% unreported.

For fixed base operators, the survey showed these results: In 1938, 64.03% reported a profit, 5.73% a loss, 1.67% broken even, and 28.57% unreported. In 1939, 52.8% reported a profit, 6.0% a loss, 3.93% broke even, and 37.27% unreported. In 1940, 59.35% reported a profit, 4.78% a loss, 0.28% broke even, and 35.59% unreported.

Bulk of the profit reported by airport owners was found in the $100-$5,000 bracket, while that of the fixed base operators consistently reached its peak in the $1000-$5000 bracket for the three-year period. The loss brackets followed a somewhat similar pattern.

Estimated dollar profit for airport owners ran less than $500 in 1938, climbed to over $1000 in 1939, and dropped back to approximately $750 in 1940. Estimated dollar loss in this category ran consistently in excess of $2500 for all three years.

Estimated dollar profit for the fixed base operator approached $4000 in 1938, dropped back to little more than $3000 in 1939, and then jumped to nearly $7500 in 1940. Estimated total dollar loss was consistently negligible for the three year period in this category.

Westinghouse Forms Gas Turbine Division

The formation of an aviation gas turbine division for the manufacture of military, and later, commercial gas turbine aircraft engines, based on the jet engine it already has developed for the Navy, has been announced by the Westinghouse Electric & Manufacturing Co. The new division will have its headquarters at the company's South Philadelphia Works, with George H. Woodward, formerly manager of the new products division, as manager. W. F. Boyle, who formerly coordinated gas turbine activities within the steam division, has been named sales manager, and Reinout P. Kroon, formerly manager of development engineering in the steam division, will be manager of the engineering department. Samuel S. Stine, previously assistant works manager of the steam division, will be manager of manufacturing.

The new Westinghouse engine follows a straight line design utilizing an axial flow rather than a centrifugal compressor.

Civilian Heroes— Two hitherto unsung heroes of one of the war's most difficult civilian flying assignments—Lloyd Milner of Minneapolis and Roman Justiss of Spokane, Northwest Airlines' pilots who have been flying military cargo planes along the Aleutian Islands—have received Air Medals. It was the first time the award had been given civilian pilots for thus aiding military operations in the Aleutians. Milner is shown receiving his medal from Gen. D. V. Gaffney.

CAA Urges Municipalities: Get Airport Sites Now

The Civil Aeronautics Administration is urging municipalities to get possession of potential airport sites now, rather than wait until after the war when such sites will be in demand for housing projects and for parks.

Charles B. Donaldson, director of the CAA's Airport Service, says: "We recognize there will be a sharp demand for acreage close to cities after the war when the nation begins to catch up on home building which the war has interrupted. Competition of would-be buyers of land will therefore be heightened, and if the cities can get possession of potential airport sites now, they will be in a better position after the war. Location and design of these airports is a matter in which the CAA can help, and we are eager to do it. Once such land is built up, it is lost for airport purposes forever."

Donaldson said that the function of the CAA "is to advise on the location, design and construction of airports. It is also our duty to see that federal money is wisely spent, and there were instances in our recent program of building war airports, where the site selected by the city was inexpensive to buy, but very costly to prepare. In that program, only federal money was used to prepare the landing facilities with the local sponsor providing only the land. If Congress authorizes our proposed airport program, however, the whole cost probably will be shared 50-50 by the local sponsor and the federal government. Thus, site selection becomes more important financially to both parties.

Private Pilots' Physical Exams May Be Made By Any Doctor, Wright Says

T. P. Wright, administrator of Civil Aeronautics, has signed an order providing that physical examinations for private pilots may be made by any registered physician beginning June 1. The order resolves one of the questions that has troubled the aviation industry for several years.

Wright said that the new procedure directs CAA inspectors to provide applicants with a simple form to be filled out by any "competent, licensed physician," thus increasing the availability of physicians for this purpose. "It will provide adequately for the safety of the public, and it will permit, in conjunction with the change to be made in the Civil Air Regulations, a cost in time and money to the prospective pilot."

The change applies only to applicants for private and student pilot licenses. Physical examinations for commercial certificates will be unchanged, Wright said, and still will be given by physicians whom the CAA designates.

Aviation Underwriting Shows Liberalization

The Institute of Life Insurance reports that the trend toward liberalization of aviation underwriting, halted at the start of the war, has been resumed by life insurance companies, with both passengers and crews now being able to obtain life insurance protection on the most liberal basis of any time in the history of aviation.

The general practice toward liberalization of aviation underwriting, as reported by 36 companies surveyed by the Institute, showed:

More than two-thirds of the companies studied now include airline passenger travel, regardless of the amount, at standard rates. In 1940, only slightly more than one-third of the companies accepted passengers at standard rates, regardless of the amount of travel.

One-half of the companies questioned will now include airline flying for airline pilots and crew members at extra premiums ranging from 50 per cent to 80 per cent lower than those charged in pre-war 1940. The size of the policy available to this personnel has increased from $5000 to $25,000 in the comparable periods.

More than one-third of the companies will now fully insure owner-operators of pleasure craft at extra premiums which are about 50 per cent under those charged in 1940. Companies which do not insure such flyers have decreased from 25 per cent in 1940 to eight per cent at present. Passengers in private aircraft may now be insured at standard rates by nearly one-third of the companies, if such flights are not too numerous, the amount of flying recognized as normal ranging up to 100 hours annually.

Insurance companies will accord the same treatment to civil pilots of private company planes as those offered airline pilots, provided they are equally qualified with respect to training, type of flying and quality of the plane in use. More than half of the companies will insure passengers in private company planes at standard rates, where expected flying is not excessive—again ranging up to 100 hours annually.

Military overloads land

more safely on nylon tires

Even Boeing's Superfortress has increased its bomb load with stronger B. F. Goodrich tires

NYLON CORDS make better airplane tires for military planes because they are stronger, and because, for the same load capacity, they are lighter.

In most cases today, nylons weigh almost the same as tires made with rayon. But that is because, instead of being made smaller to carry the same load formerly carried by rayon cord tires, they are made in the same size, and the loads carried are increased.

While the established "ratings" for nylon tires have not been changed, the "service loads" actually carried in many military operations have been calculated and show increases of 22% to 57% above the ratings. B. F. Goodrich engineers rate nylons at least 25% stronger for the same number of plies.

Today, all 56-inch tires are made with nylon. In fact, at least 75% of all military tires are now converted to nylon, and other conversions are being set up to raise this figure to at least 95% within a matter of weeks.

How nylon increases "payload" in tires

The air in the tire carries the load. Nylon cords of equal size have a tensile strength of between two and three times that of cotton cords, and nearly double that of rayon cords. So with stronger nylon, the air pressure can be increased and the load increased in proportion.

Other factors contribute to longer service life

Fewer tires made with nylon are removed from military service because of bruising than was ever true with rayon cord tires. Nylon lasts longer, too, because of its greater fatigue resistance. Fatigue tests of tire cords under equivalent operating conditions and at 300° F. showed that rayon lasts three times as long as cotton, and nylon eight times as long. The B. F. Goodrich Company, Aeronautical Division, Dept. Akron, Ohio.

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FIRST IN RUBBER

Subsidy Attack on Feeder Lines Likened to 'Wolf Wolf'

Post Office Profit Held Possible With Fair Mail Pay Rate

(This article on a pertinent current issue is published for its news content and does not necessarily reflect the views of AMERICAN AVIATION.)

By JAMES G. RAY

SOME of the existing trunk airlines are pursuing certain policies, the wisdom of which is open to serious doubt. In particular, I have reference to the one which is common to most of the feeder airline hearings being held by the Civil Aeronautics Board, and which may be termed the "Subsidy" line of attack. It involves frequent usage of the word "subsidy" as an argument against certification of new air carriers. The allegation is made that feeder lines would require Government mail subsidies, being so phrased as to suggest that this would be a sinister, unsavory thing threatening the future existence of all scheduled air transport.

J. G. Ray

However, an examination of the feeder airline proposals which these trunk lines allege always would be a heavy, unprofitable burden on the taxpayers reveals no facts supporting the accusation. Merely because feeder line applicants do not claim an ability to be self-supporting at the outset of operations without any mail pay whatever, it does not necessarily follow that they would require "subsidies."

In fact, in many parts of the nation, if feeder lines are laid out and operated properly, the Post Office Department should be able to pay them a fair rate for carrying the mail and still reap a handsome profit from the increased postage revenues. This was proved by the recent West Coast Case, in which several feeder applicants projected air mail volume (substantiated by an actual Post Office Department mail count) sufficient to more than pay for the costs of their respective proposed operations. In one instance, the applicant's figures indicated a probable net profit of approximately $2,000,000 annually to the Post Office.

There can be no possible argument that the service would be on a "subsidy" basis in such instances. So long as the Government derives more revenue than it expends on any given service, then it becomes just good, sound business from the Government's standpoint to help that service become established. The cost of so doing is immaterial.

There is just as much mystery *how* these trunk lines arrived at their definition of "subsidy" as to *why* they did it in the first place.

Apparently, it is based upon the assumption that any air service which requires more than the so-called "compensatory" mail rate of .3 mill was determined to be the subsidy base only because it is the lowest rate now being used to determine trunk line mail payments. Yet these same companies have neglected to tell the public that this is a rate which does not apply to all of the present air carriers; in fact, in 1943, only six lines were paid at this "compensatory" rate. The others all received straight mile-flown payments, many of which were higher by far than most feeder lines have indicated they would need to operate at a profit.

True, this situation will be much improved when 1944 figures are available; but even in these days of high, war-stimulated revenues, some five or six carriers still are receiving all the way from four to 12 times more than the .3 mill rate.

ATA Reports Cited

According to recent Air Transport Association reports, all carriers combined received $23,427,686 for 56,693,450,699 mail miles flown in 1943. This figures out to be an average payment of .41 mill per pound mile. Does the excess over .3 mill of $6,236,280 represent a "subsidy"?

Or, perhaps, should the cost of carrying passengers be used as the basis for determining the "subsidy"? The current passenger fare of approximately five cents per mile breaks down to between .225 and .25 mill per pound mile. Why should the Government pay 16½ per cent more to an airline for carrying the mail than that line charges its passengers?

Possibly it would be still more fair to take the cost of carrying air express as the basic figure. During 1943, a total of 30,235,849,171 air express pound miles were flown at a rate of .265 mill per pound mile; why .3 mill for air mail occupying the same space?

Moreover, the new "show cause" order against the four largest trunk air carriers suggests a figure of slightly more than .15 mill per pound mile as being sufficient compensation for carrying the mail. If this new figure should be adopted, would not this mean that the "compensatory" rate of .3 mill itself contained a 100 per cent subsidy?

It seems entirely possible that if the trunk lines persist in their "subsidy" attack that the same situation may arise eventually that resulted from the youngster falsely crying "wolf" to the sheepherder once too often. It will be difficult to explain satisfactorily this talk of subsidy after the war, when present 90 per cent load factors return to the 60 to 70 per cent dictated by good business, which may require higher mail payments to compensate for the lower passenger revenues. Aren't these same carriers then apt to find themselves victims of their own propaganda?

I think it must be evident by now that it is impossible to take any given figure and arbitrarily determine that a payment higher than that amount is "subsidy." The only true definition or test for determining just where subsidy actually begins is that point at which the Government no longer gets its money's worth for the service it buys.

Thus, we never cry "subsidy" at the postman who delivers mail from door to door in our larger cities, yet, if we stop to figure it out, he actually is paid some 33 cents per pound mile for carrying the mail, or 110 times as much as the .3 mill paid to the larger trunk airlines! No subsidy accusation is made because the Post Office Department incurs a loss of some $80,000,000 per year on rural free delivery service. Nor do we condemn it for "subsidizing" publishers because second-class mail—delivering newspapers, periodicals, etc.—costs nearly $86,000,000 more annually than the revenue generated from this class.

Actually, the amounts paid in these instances, and to air carriers—and which would be paid to feeder lines—are nothing more than just compensation for a service that cannot be provided by any other means. If, for convenience of nomenclature, it is persisted that these are subsidies, then they have been a part of our Governmental setup for a long time; they make possible the performance of very necessary and worthwhile functions; and there is no valid reason for doing away with them.

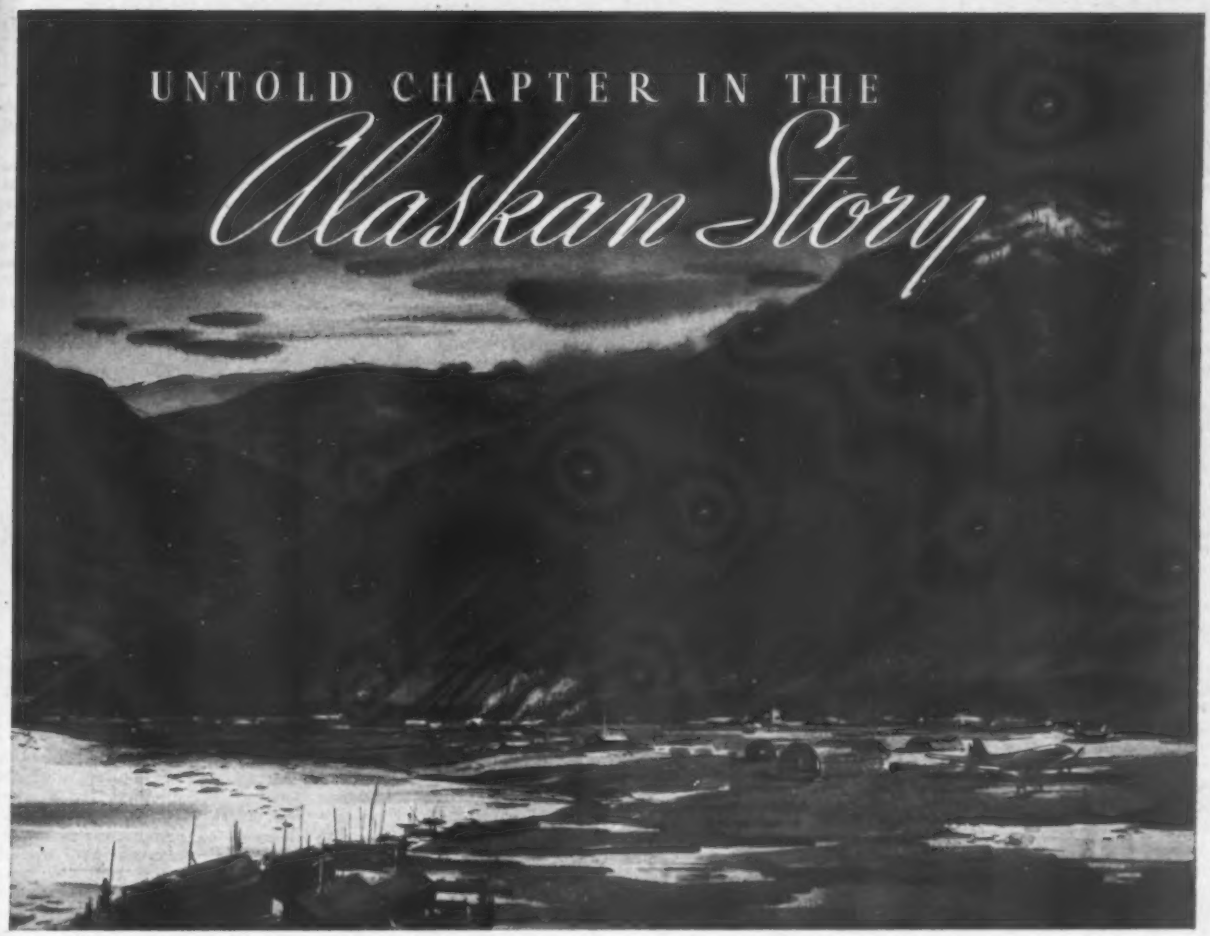
If the expansion of direct air mail service through feeder lines to thousands of our smaller cities and towns requires the same type of "subsidy," why should it prove any more objectionable, as such, than the "subsidized" services which we already have? Certainly there can be no argument that feeder airlines are not a good national investment.

Existing trunk lines bring direct air service to about one-third of the total United States population; feeder airlines can extend direct service to nearly another one-third. Overnight delivery of air mail now is possible only between our largest cities; feeder airlines can make possible next-day delivery of air mail between virtually any two points in the entire country. Who could argue that such a mail service would not be of tremendous value?

Would Break Bottleneck

At present, the greatest bottleneck on a journey from the average small town is in getting to the main channels of transportation at the nearest large city or trade center, whether the traffic of passengers, mail or express. In breaking this bottleneck, feeder airlines would save more in time and cost in proportion to the length of the journey than is saved by trunk line flights between large centers. Thus, even if feeder lines should cost the taxpayers something in the form of a Government "subsidy," they definitely would be a good national "buy." And, as pointed out, there is every likelihood they not only will not require "subsidizing," but actually will return to the Government a substantial profit in the form of increased postal revenues.

Finally, it seems to me unfortunate that a large segment of the American public has a preconceived aversion to any form of Government subsidy for anything. Perhaps, to them, "subsidy" suggests feeding

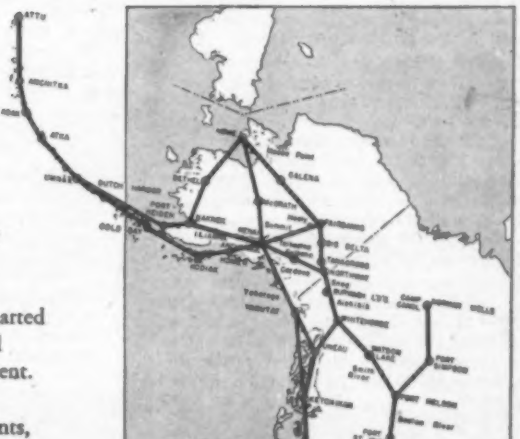


● In the first frantic weeks after Pearl Harbor, airline transport planes filled an historic role in our national defense—carrying materials of war to the Aleutians under the nose of Jap bombers.

Western Air shared in that emergency. Working under the Air Transport Command, our assignment was a tough one—the 2000-mile U. S. to Alaska route. Since early 1942, Western has carried more than 20,000,000 pounds of cargo on 5000 flights. Flying this rugged route, Western won recognition for highest aircraft utilization—*averaging 15.9 hours per day in the air.*

Today Western is shuttling personnel, mail, and cargo to the Arctic front. But, where just three years ago we flew uncharted routes to make-shift landing strips, we now have the most advanced navigational aids to airports that are as good as any on the continent.

Like its Alaskan operations, Western Air's extensive domestic service, built during 19 years of pioneering achievements, is geared to the war effort—to bringing the best air transportation in the West to essential traveler and shipper.



WESTERN AIR LINES

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at the Government trough, wastefulness of public funds, or wanton and unnecessary expenditures. With this meaning, subsidy is, of course, abominable; but this is not its true meaning. True subsidy has a very important place in modern government, as proved by the fact that our instinctive aversion to it has, in the past, caused much direct damage to ourselves as a nation.

The example of this most frequently mentioned is our failure to encourage the maintenance of a strong Merchant Marine in the years between the two wars. As a result, we had no appreciable quantity of shipping in 1941, and to provide hastily the ships and crews to sail them has proved a great deal more expensive than would have been sufficient "subsidy" to keep our World War I Merchant Marine intact—more expensive by millions, perhaps even billions, of dollars.

Another outstanding example of a somewhat different type was our farsighted policy in subsidizing the trunk airlines by high mail rates to the extent necessary to establish and support our existing air transportation system. In every year from 1918 until 1943, the Post Office Department spent more for air mail—principally in payments to air carriers—than it received in air mail revenues. This lavish and prodonged subsidy bought us an air transport industry that has paid for itself many, many times over in the past three war years as an effective arm of our national defense. And, we now find that during fiscal 1945, or not later than by early fiscal 1946, profits from domestic air mail will wipe out the deficit incurred over the entire 28-year period of service.

It seems to follow naturally that if the establishment of an incomplete air transport system directly serving only one-third of the national population was so valuable to us, and the investment made in establishing it was such a very good and profitable one, then to complete that system would be of still more value and a still better national investment.

In other words, why is it *now* so wrong for the Government to continue its investment in air transportation by aiding feeder lines until the nation's air system is complete? And, in view of the above facts, isn't it just a bit incongruous that some of the airlines, who owe their very existence to subsidy and who, by their own definition of the word, still are accepting it, now should suddenly find the whole idea of subsidy so revolting?

If the current crop of crocodile tears and "wolf" cries on the "subsidy" score represent the best the trunk lines can muster to justify their position of opposition to new feeder air carriers, then their argument can only be adjudged as very weak.

Campbell Wins Medal

Kenneth Campbell, senior project engineer, Wright Aeronautical Corp., has been awarded the Wright Brothers Medal by the Society of Automotive Engineers for his treatise "Engine Cooling Fan Theory and Practice," judged to be the best paper on aerodynamics delivered before an SAE meeting in 1944. The presentation was made at the Aeronautical Meeting of the SAE Metropolitan Section in New York April 5.

New Bell Fighter Designed to be Shot At

THE Army Air Forces now have a new fighter the sole function of which is to be shot at and hit if possible by our own forces. Designated the RP-63, the unique ship is a special modification of the P-63 Kingcobra designed by Bell engineers to serve as a target plane in the Army's live-ammunition, frangible bullet training program.

The RP-63 is covered with more than a ton of specially treated armor plate against which the .30 calibre lead and plastic machine gun slugs developed by Maj. Cameron Fairchild of the Training Command's Central School for Flexible Gunnery disintegrate harmlessly into a fine powder of the approximate consistency of sugar. Under this special armor are delicate instruments which when bullets strike the armor transit an impulse to a spotlight in the center of the propeller hub causing it to flash brightly.

Armor on the Flying Pinball, as the new ship is known to Army gunners because of the way it lights up when they hit it, is of a special dural alloy developed under Maj. Fairchild's direction, and ranges from one-eighth to one-quarter inch in thickness. It is bolted rather than riveted into place.

Primary consideration was given to complete protection for the pilot, and the armor around the cockpit is heavier than in other sections of the plane. In addition 1½-inch laminated bullet-resisting glass is used in the windshield, and 1-inch glass on the side shields, cabin top and cabin doors. A special steel grille was designed for the air ducts to provide full protection and still permit proper cooling, and the exhaust stacks are shielded by a steel guard. The entire plane is covered with varying degrees of armor, even to replacing fabric tail surfaces with metal; and a special thickwalled, hollowed section propeller which resists machine gun fire is employed.

The planes are painted a bright orange as positive identification and to insure distinction from unarmored aircraft. Despite the modification they will do over 300 miles an hour at 25,000 feet.

This special armored version of the Bell Kingcobra is used as a target plane for training aerial gunners with live ammunition. The frangible bullets used by the students disintigrate into powder as they hit its sides, but the shock lights a signal in the propeller hub, permitting them to keep score.

New Designation

The RP designation of the special modification of the Bell Kingcobra used in frangible bullet gunnery training signifies that the plane is restricted from combat, according to the War Department. The only other publicly announced plane to carry this designation is the North American RP-64, a recently declassified experimental fighter.

UAW-CIO Certified

The National Labor Relations Board has certified the UAW-CIO as the exclusive representative for collective bargaining of all hourly paid employes at Douglas Aircraft Co. as a result of election held March 15. About 71 percent of the votes were cast for UAW.

1000th Test Flight Made

Ben Swineford, veteran engineering test pilot for Goodyear Aircraft Corp., has completed his 1000th test flight in Goodyear-built Corsair fighter planes.

March Plane Output Gains Three Percent

The production of 7053 planes of all types in March was three percent above schedule and 12 percent over February's total of 6296. The average daily rate of 261, however, was slightly under the February average.

Some over-schedule acceptances were planes, especially several Navy fighters, produced in February, but held up by weather or failure to receive subcontracted items. Total airframe weight was 79,200,000 lbs. excluding spare parts, an increase of 11 percent over February.

The following table shows acceptances compared with the number scheduled:

	Acceptances	Schedule
Bombers	2,544	2,542
Fighters and Naval Reconnaissance	3,329	3,152
Transports	615	620
Trainers	176	176
Communications and Special Purpose	389	373
Total	7,053	6,863

Service

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Question by Prospective Private Plane Owners:

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Sales volume of personal planes after the small "glamor" market is depleted depends in large measure on how well that question is answered by the aviation industry.

Southeastern Air Service, Inc., is ready to say "Yes" for its territory. Through its own aircraft service bases and its system of Associate Bases, Southeastern will give Superior Service to Private Flyers.

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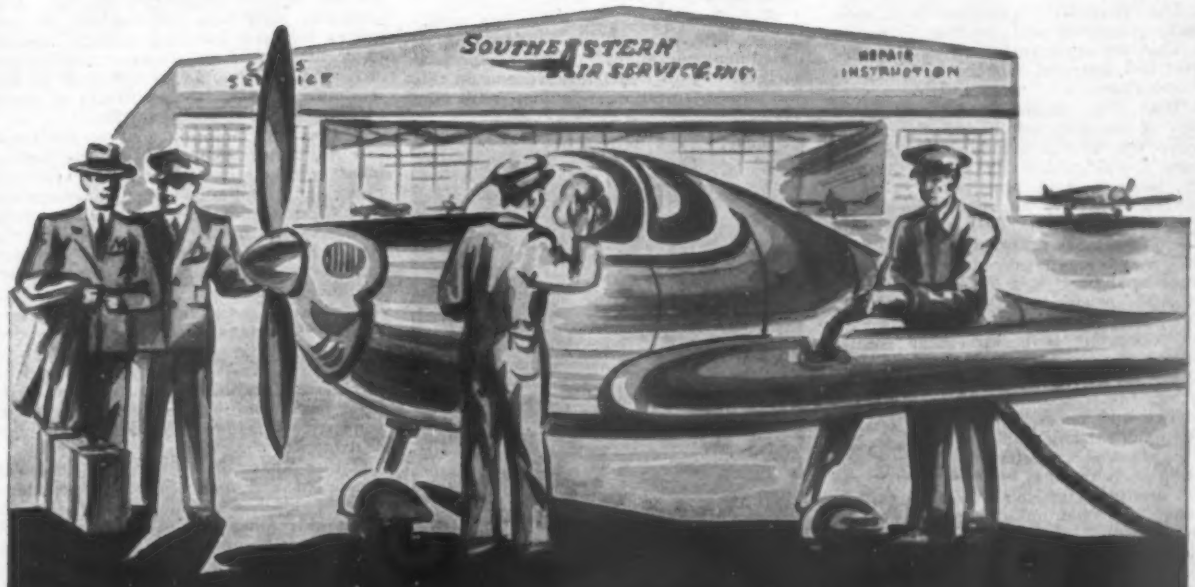

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Aircraft Service Operators Oppose Economic Regulation

'Not Enough Business To Regulate' Says NATA's Roscoe Turner

By KENNETH E. ALLEN

THE Civil Aeronautics Board took an official look into the field of non-scheduled operations with respect to economic and safety regulation last fortnight, and after three days of hearings these conclusions were readily apparent:

The airlines want immediate economic regulation of non-scheduled operations, while representatives of the aircraft service operators pleaded for continued exemption from such regulation, at least until such time as the business has attained sufficient stature to warrant regulation.

Dr. Lewis C. Sorrell, director of research of the Air Transport Association, recommended that a flexible type of regulation be set up for irregular route service which would eliminate the comparatively long and expensive procedure associated with attaining a certificate of convenience and necessity.

He suggested that certain operations could be authorized on temporary permits under which the applicant would have to show:

1. The proposed operation has been soundly conceived and organized;
2. That the applicant possesses the personnel and financial capacity to carry on the operations;
3. That the applicant is sufficiently aware of his responsibility to the public to live up to the standards of an air carrier.

Dr. Sorrell said that such permits could be issued at informal conferences, rather than formal hearings, with the right of hearing reserved if there was objection. Such a procedure would require legislation, and he recommended that such legislation be enacted.

Dr. Sorrell suggested that contract carriers operating over irregular routes should be required to show that their operations were consistent with the public interest, rather than proving public convenience and necessity.

He held further that the CAB should be empowered to determine who is operating such services where such operations are going on, and their magnitude through the medium of permits and the filing of rates.

Roscoe Turner, president of the National Aviation Trades Aassociation, declared that there were only two legitimate reasons for regulation and asserted that "we operators at present do not have enough business to regulate."

His reasons for regulation were: (1) "to protect the public from being abused and walked over by powerful interests," and (2) "to protect the investor who cannot speak for himself, therefore, subsidies by our government, which is the taxpayers' money, should be protected by certificates of convenience and necessity."

NATA held that many phases of the aircraft service business "are individualized and entirely dependent upon the private enterprise and experience of the person who engages in them."

"It would patently be impossible for the Civil Aeronautics Board to attempt to assign a closed territory or aviation operating pattern for the sales and service of any particular type of aircraft. That in itself is the prerogative of the manufacturer.

"To those in this phase of the business, it seems impractical to impose economic regulation until sufficient time has elapsed as to show whether there is any actual necessity for such a move."

The question of safety regulations for non-scheduled operations was broached by Jesse W. Lankford, director of the CAB's Safety Bureau, but the issue received little discussion throughout the hearing, primarily because most witnesses said they were not qualified to discuss the operational phases of aviation.

Lankford stated that preparations should be made now for the promulgation of safety regulations which would discourage unsafe operations in order that the growth of non-scheduled flying will not be retarded.

Lankford submitted a three-page questionnaire for study by parties appearing at the proceeding, and among the questions asked was this:

"Should a date be set now when multi-engine airplanes will be required for all instrument operations." Turner expressed agreement with the Safety Bureau on this and other questions, dealing with the use of single engine aircraft for instrument and night operations.

Arthur H. Tully, director of the Massachusetts Aeronautics Commission and vice-president of the National Association of State Aviation Officials, characterized non-scheduled flying as the "taxi-cab business of the industry." When abuses appear, he said, then is the time to regulate them, and if regulation is necessary, then it would be better for the states to have first voice in promulgating such regulations.

James E. Moore, director of economic research of United Air Lines, proposed that economic regulation be set up according to types of carriers and types of service rendered by them. Under this proposal, three classes of common carriers would be established—all of them subject to economic regulation.

Moore defined his classifications as follows: Class I—carriers offering a scheduled regular service such as is presently performed by the certificated air carriers; Class II—limitation of a non-scheduled carrier over a regular route, and Class III—carriers which would be restricted to a non-scheduled, irregular route operation, such as the aircraft service operator.

Class I common carriers would be subject to maximum regulation, while the regulations applying to Classes II and III would be less extensive in scope and less stringent in their requirements, Moore said.

Degree of Regulations Differs

Under this setup, contract carriers would also be subject to economic regulation, but to a different degree. For example, such operators would be required to have operating permits instead of certificates of convenience and necessity, and they would be required to file minimum charges and contracts in place of filing and publishing tariffs.

E. Smythe Gambrell, counsel for Eastern Air Lines, expressed general agreement with United's proposal, asserting that all commercial air transportation should be regulated in the public interest. He said the Board should regulate the contract carrier along with the common carrier, since the line of demarcation is difficult to draw.

E. J. Foley, assistant to the vice-president of American Airlines, recommended that the CAB's exemption order applying to non-scheduled carriers "should be terminated at once because of its artificial and confusing segregation of air transportation into 'scheduled' and 'non-scheduled.'"

Rather than drawing a line between scheduled and non-scheduled operations, Foley held that classification of air carriage, if required in the public interest, is properly applicable to routes or to services but not to carriers. A primary classification, he said, would be: Common, contract and private carriage by air.

A great bulk of the testimony heard at the hearing dealt with the movement of cargo by the contract carrier. Most spokesmen for this type of operation held that economic regulation of the business at this time would stymie its growth.

Said W. D. Outman, director of the Florida Economic Advancement Council: "It is our hope that the Civil Aeronautics Board will leave the door open to all who can demonstrate the willingness and ability to undertake such (contract-cargo) services."

Hits Regulations— Roscoe Turner, president of the National Aviation Trades Association, outlines his views on the regulation of aircraft service operators at the CAB's non-scheduled hearing in Washington. He said such operators do not have enough business to regulate, asked that regulation be withheld "and see where we go from here." In the background, left to right, are Examiners C. C. Henderson and William J. Madden.

JET PROPULSION

ANOTHER USE FOR "A-Q" GEARS

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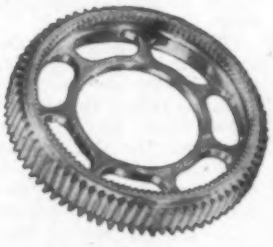

A copy of this informative product engineering manual on "A-Q" gears will be sent to you on request as soon as it is ready.

ON THE DRAFTING BOARDS of America's aircraft engineers are tomorrow's airplanes—planes that will bring New York City a little more than an hour away from Chicago—London five brief hours from New York. One of the advances that make these high speeds possible is the development of jet propulsion engines.

Still experimental in many phases, jet propulsion engines are today powering fighting ships on the European front. These engines offered many technical problems to designers, not the least of which was the gears. Because of the exacting demands of precision, light weight and high speed, it was natural for builders to look to Foote Bros. for the solution of this tough problem in gear design and production.

The jet propulsion engine is another example of how "A-Q" gears can aid technological development. These gears may well offer a successful solution to production problems you face on machines and equipment which you are manufacturing or planning to manufacture. Foote Bros.' engineers will gladly discuss with you the problem of producing gears to assure you greater mechanical efficiency, lighter weight, higher speed, greater quietness.

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Tenth Allocation Due to Give 4 DC-3s to Domestic Lines

U. S. Airline Fleet Will be Eight Above Prewar High of 359

A TENTH ALLOCATION of transport planes is in prospect. It will give four more planes to domestic airlines—one DC-3 each to American, United, TWA and Northwest, plus one to Pan American Airways. This allocation will bring the domestic fleet to 367, or eight above the prewar high of 359. Two Lockheed Lodestars are expected to be allocated, one to General Mills Co., a war contractor, and one to DTA, Angola, a Portuguese company.

The ninth allocation of an additional 20 transports, eight of which went to United States applicants, including three to domestic airlines, was announced by the Surplus Property Board late last month. United, TWA and American each received one DC-3, bringing the domestic airline total to 363, or four above the all-time high of 359 in 1941.

The distribution under the ninth allocation was:

Domestic Applicants

DOUGLAS (DC-3 TYPE)

Woodley Airways (Alaska)	1
Peck & Rice Airways (Alaska)	1
United Air Lines, Inc.	1
Transcontinental & Western Air, Inc.	1
American Airlines, Inc.	1
	5

LOCKHEED (LODESTAR TYPE)

U. S. Department of Agriculture	1
Lear, Inc., Piqua, Ohio	1*
Lockheed Aircraft Corp.	1
	3

Foreign Applicants

DOUGLAS (DC-3 TYPE)

*Department of Civil Aviation, Commonwealth of Australia	2

LOCKHEED (LODESTAR TYPE)

Aerotransportes, S. A. Mexico	2
*Department of Civil Aviation, Commonwealth of Australia	5
Divisao de Exploracao dos Transportes Aereos de Angola (DTA)	3
	10

*These surplus planes are in Australia at present.

Air Mail Rates Cut

Substantial reductions in air mail rates from continental United States and Alaska, Puerto Rico, and the Virgin Islands, to the Canal Zone and Central and South American areas went into effect this month.

The new rates per half ounce are: Argentina 20c, reduced from 40c; Barbados 10c, from 25c; Bolivia 20c, from 35c; Brazil 20c, from 40c; British Guiana 15c, from 30c; British Honduras 10c, from 20c; Canal Zone 10c, from 15c; Chile 20c, from 40c; Columbia 25c, from 35c; Costa Rica 10c, from 15c; Curacao 10c, from 25c; Ecuador 15c, from 30c; Falkland Islands 20c, from 40c; French Guiana 15c, from 30c; Guadeloupe 10c, from 15c; Guatemala 10c, from 12c; Republic of Honduras 10c, from 12c; Leeward Islands 10c, from 15c; Martinique 10c, from 15c; Nicaragua 10c, from 12c; Panama 10c, from 15c; Paraguay 20c, from 40c; Peru 15c, from 30c; El Salvador 10c, from 12c; Surinam 15c, from 30c; Trinidad 10c, from 15c; Uruguay 20c, from 40c; Venezuela 15c, from 25c; Windward Islands 10c, from 15c.

Air mail postage on articles sent from U. S. possessions in the Pacific to Latin American points will be the prescribed postage for carriage by air to the continental U. S. plus the postage for air service from the U. S. to the respective country listed in the foregoing group.

Trips by CAA Personnel

Carl Posey, CAA district airport engineer at St. Paul, has been assigned to advise the government of Costa Rica on the improvement of the airport at San Jose. Charles F. Dycer, chief, CAA Flight Engineering and Factory Inspection Division, and Paul Spiess of the CAA Aircraft Engineering Division have left for London to confer with British technicians on airworthiness requirements of aircraft used in international civil operations.

CAL Opposes American's Plan for Service Linking Oklahoma City & El Paso

Continental Air Lines has objected to a proposal of American Airlines to inaugurate direct service between Oklahoma City and El Paso, Tex., on the grounds that such service would prejudice Continental's position in the reopened El Paso-Oklahoma City-Memphis case.

The reopened proceeding involves local service between El Paso, Wichita Falls, Lubbock, and Oklahoma City. Continental maintains that should it be certificated to operate this route, it would be dependent upon terminal to terminal traffic. Should the CAB permit American to inaugurate the direct El Paso-Oklahoma City service, Continental then would have to share that traffic with American, the company states.

Continental does not take the position that American cannot institute such service, according to S. B. Redmond, CAL's attorney in charge of research, but rather that premature approval of such service would unduly prejudice Continental's prospects of developing traffic over the route, in the event it was awarded to Continental.

TWA Announces Fare Cut Averaging 10%

Transcontinental & Western Air has announced a system-wide reduction averaging 10 percent in passenger fares, subject to approval by the Civil Aeronautics Board. The new tariffs would be effective May 1.

E. O. Cocke, vice president-traffic, said savings effected by the new tariffs would range up to 17 percent in some instances, as in the case of the Chicago-Washington fare. The new tariff will provide a five percent discount in all round trip fares.

North Atlantic Case To be Decided First, Others Being Rushed

The North Atlantic routes will be the first awarded for international operations, L. Welch Pogue, Civil Aeronautics Board chairman, has disclosed officially.

In a speech before a joint session of the Maine Legislature in Augusta, Pogue indicated that other of the international route cases were moving along at a fast clip, but that all such decisions are subject to the approval of the President.

With respect to the development of air transportation, both domestically and internationally, Pogue said that 16 cities and 5316 miles of routes were added last year to the domestic transport system, bringing the number of cities served to 400. The Air Transport Command, he said, is making 65 transport crossings of the Atlantic daily.

"The war has made America accept the air en masse," Pogue said, pointing out that "in 1938 our international air transportation system amounted to about 31,000 miles. Since that time, and before our entry into the war, we have added approximately 20,000 miles of routes in our expansion of this new form of transportation beyond our national borders."

On the subject of local air service, Pogue reiterated his belief in the possibilities of non-scheduled transportation as a service to smaller communities "which might not be able to generate sufficient traffic to maintain an economic regularly scheduled route operation."

"Whenever the traffic between particular points becomes sizeable and regular, an application, of course, can always be filed with the Civil Aeronautics Board for authority to conduct a regularly scheduled service."

Pogue expressed optimism over the possibilities of private flying, pointing out that the "technological brains which are now going into the production of the fastest and best military type aircraft will be able at the conclusion of the war to devote a portion of their talent to the design and manufacture of a personal type plane which will take aviation to additional hundreds of thousands of our citizens."

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GRAND CENTRAL AIRPORT

"Cal-Aero" has purchased outright, the famous Grand Central Air Terminal in Glendale, California. With its mile long runway, huge hangars, shops and facilities, it is an active, modern and thoroughly equipped airport for every service and utility to private and commercial operators. Originally acquired by the Curtiss-Wright Corporation in 1929, at a cost of almost $3,000,000, it has been classified by the CAA as Class IV—"Suitable for the largest aircraft now in use or planned for the immediate future."

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United Takes Denver-Los Angeles CAB Decision to U. S. Circuit Court

Interchange Issue Cited as Vital Point In Appeal Petition

UNITED AIR LINES has filed with the U. S. Circuit Court of Appeals, District of Columbia, a petition asking the court to review the decision of the Civil Aeronautics Board on the route between Denver and Los Angeles.

The route was awarded to Western Air Lines, which was recently authorized by the CAB to begin operation of a cargo and mail service over the route. Western announced that the service would begin May 1.

United's appeal was based on 11 points of error which the carrier alleged the Board made in awarding the route to Western. Chief among United's complaints was that the Board's decision was based on grounds not expressly stated in its opinion of Nov. 11, 1944.

United explained its stand with this statement:

"The Board has either awarded the Denver-Los Angeles route to Western Air Lines on the basis of assumptions that United Air Lines and Western Air Lines will execute an agreement providing for the interchange of planes at Denver and that such an agreement will be approved by the Board, and continued in effect, or the Board has decided, without expressly saying so, that more than 50,000 passengers a year going to and from Los Angeles shall change planes at Denver.

"Either alternative requires that the Board's order and certificate be set aside."

United told the court that the Board could not legally base a decision upon the assumption that United and Western "will agree upon all of the terms and conditions of a complicated interchange agreement, and upon the further assumption that this imaginary agreement will be approved by the Civil Aeronautics Board and continued in effect indefinitely."

United stated further that the Board "cannot legally decide one case by assuming what its decision is going to be in another case which has not been tried or even presented to it."

The petition further stated that "extension of the New-York-Chicago-Denver portion of United's route directly to Los Angeles would create the shortest transcontinental air route between New York, Los Angeles and Chicago," adding that "about 80 percent of the total traffic which may be expected to move over the Los Angeles-Denver route will be destined to or will originate at points east of Denver on United's transcontinental route. It thus appears clear that the interest of a large portion of the traveling public on the proposed route from Los Angeles to Denver would best be served if it were operated by United as a transcontinental carrier."

Eastern Declares First Dividend in Its History

Eastern Air Lines, Inc., will pay the first dividend in its history June 12 to stockholders of record May 25, 1945. The board of directors voted to pay a semi-annual dividend of 50 cents a share.

"The management of Eastern Air Lines has maintained a progressive policy in respect to improvement and expansion of its services to the public," Capt. E. W. Rickenbacker, president, stated. Commenting on what he termed had been the company's conservative policy in respect to the building up of its capital and cash reserves, Rickenbacker said Eastern had maintained a program of the highest efficiency and economy and has put back into its operations every penny it has earned to meet the ever-growing demands upon its services.

"The company has never paid a dividend to its stockholders. As a result of this policy the company has accumulated substantial cash reserves which are needed in the extensive re-equipment program upon which it is now embarked," he stated.

Ansett Resumes Civil Lines After Aiding U. S.

With the Pacific war receding from Australia, Ansett Airways has been released from the contract under which it has operated day and night services for the United States Army Services of Supply since June, 1942. The company has used Lockheed aircraft in this service.

Ansett has been given permission to fly twice daily services between Melbourne, Wagga and Canberra, and between Melbourne, Mt. Gambier and Adelaide.

Denver Interchange Problem Highlights Des Moines Hearing

HIGHLIGHTING the closing sessions of the Civil Aeronautics Board's North Central hearing in Des Moines was a discussion of the possibilities of setting up an interchange agreement between United Air Lines and Western Air Lines at Denver.

Harold Crary, United vice president-traffic, testified that his company would route traffic through the Denver gateway by one of three methods: first, by direct operations; second, by interchange; and third by connecting schedules with the Denver-Los Angeles operator.

By the first method, Crary explained that he meant direct operations between Denver-Los Angeles by United, predicated upon the successful appeal of the CAB's Denver-Los Angeles decision. United appealed that decision to the U. S. Circuit Court of Appeals.

Crary said United would interchange with Western, however, should the latter carrier remain the operator of the route, provided the proper type of contract and one suitable to United were negotiated and approved by the CAB.

The case of the helicopter was championed by Agnew E. Larsen, president of Rotawings, Inc., of Philadelphia, who testified that helicopters will have a practical speed of 150 to 160 miles an hour in the near future. He was a witness for the Burlington Transportation Co., which sought certificates on nine helicopter routes covering virtually the same territory as its bus and freight lines.

E. O. Cocke, vice president-traffic, and J. C. Stratton, head of route development for Transcontinental & Western Air, testified that TWA's transcontinental flights were "heavily dependent" on local traffic.

The TWA witnesses said the Chicago-Kansas City segment of 405 miles was one of the longest in the country without intermediate stops. The company proposed to include Burlington, Iowa, Moline and Peoria, Ill., on the Chicago-Kansas City segment of its transcontinental route.

Croil Hunter, president of Northwest Airlines, expressed opposition to the certification of services competitive to his company's Chicago-Twin Cities route. He said such a move would "seriously impair" Northwest's ability to operate lean segments the west of Minneapolis-St. Paul.

Leo H. Dwerlkotte, executive vice president of Western Air Lines, said that Sioux City, Ia., should be designated as a junction for two or three proposed routes so that Rockford, Ill., and Dubuque, Waterloo and Fort Dodge, Iowa, would have a "direct air connection with the West."

Western's applications were submitted under both the names of Western and Inland Air Lines, the latter controlled by Western. Dwerlkotte told public counsel that he expected a complete consolidation of the two lines would be effected within two years.

Western proposed extensions of its present Great Falls-Huron route into Chicago, and another from Denver to Minneapolis, via Sioux City, North Platte, Neb., and Mankato, Minn. The company also asked that Chadron and Alliance, Neb., be added to the Cheyenne-Huron route.

The Department of Justice entered the proceeding to question Ralph Budd, president of the Burlington Railroad, as to whether the proposed airlines would be developed as a separate service or merely as supplementary to the rail and bus systems.

Budd said that it had been his company's policy to develop its bus lines as much as possible and that that policy would be followed for the air service "even though it proves detrimental to the railroad service."

Budd expressed belief that integration of air and surface transportation could be accomplished more advantageosuly by the same company than by unrelated organizations because there would be no tendency to favor one form of travel over the other.

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Ohio Senate Urges CAB To Certificate Eastern Via Toledo and Columbus

The Ohio state senate has unanimously adopted a resolution urging the CAB to certificate Eastern Air Lines for operations from Detroit to Miami, via Toledo and Columbus. The resolution also urges the Board to certificate Eastern for operations on a Detroit-Cleveland-Akron-Miami route.

The case is now before the Board for decision. Examiner Ross I Newmann recommended Eastern for the route via Columbus. Governor Lausche, the Columbus City Council, Ohio Chamber of Commerce, Toledo Chamber of Commerce, and Detroit Board of Commerce have also endorsed Eastern.

Tampa Company to Open Caribbean Freight Line

Aero Transport Corp., of Tampa, has announced that it will begin operation soon of a freight service in the Caribbean. The company was organized by W. C. Siple, Canadian aviation executive, and is headed by W. B. Haggerty, Tampa businessman. Siple will be treasurer. Other officers are: R. L. West, Tampa pilot, vice-president; and Cody Fowler, attorney, secretary.

The service will be inaugurated with Stranrear flying boats, with the route including Cuba, Haiti, Dominican Republic, Puerto Rico, Trinidad, Venezuela, Colombia, Panama Canal Zone, Honduras and towns in Mexico, Jamaica, and thence returning to Tampa, where the company will headquarter. Haggerty said rates would be considerably lower than those presently charged for air express.

The announcement did not specify whether the proposed operation would be on a charter or regular schedule basis.

Ithaca-to-New York Daily Service Planned

Robinson Aviation, Inc., of Ithaca, N. Y., has announced that it will inaugurate regularly scheduled service between Ithaca and New York City with single-engine four-place Fairchilds. C. S. Robinson, president, said he planned to begin operations with a morning flight out of Ithaca and a late afternoon or evening return trip.

Initially, flights will be made on a contact basis, Robinson said. Ultimately, he proposes to use twin-engine aircraft with radio facilities necessary for instrument and night operations.

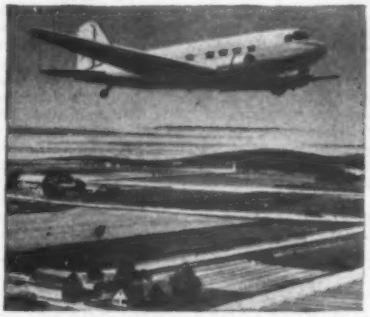
Robinson said he has applied to the CAB for a certificate for an expanded operation, which would extend his service to Washington.

Jet Also Heats P-80 Cabin

The General-Electric jet engine in the Lockheed P-80 Shooting Star supplies heat for the pressurized cockpit in addition to supplying sufficient thrust power to make the P-80 the fastest plane in the skies. Warm air flows from the impeller-compressor of the engine at controlled temperature into the cockpit to supply the cabin heat.

Gets Pump by Air Express: Dealer Saves Money, Cows get Water

WATER PUMP on Wisconsin dairy farm breaks down. The owner gives his local dealer a hurry-up call. Dealer promises quick delivery even though pump must come from Cleveland. (He has it in the morning by specifying Air Express.)



DEALER ABSORBS Air Express charges but, even so, he figures a saving of money — because the pump is a high-priced, slow-turn unit that he cannot afford to stock. (With Air Express the nation's inventory is within hours of your business.)

THOUSANDS of businessmen find this fastest delivery a real economy — *a real money-maker* — when a customer wants something not in stock. (Yes, with Air Express, you give high-speed service on high-priced items without cost of stocking.)

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25 lbs., for instance, travels more than 500 miles for $4.38, more than 1,000 miles for $8.75, more than 2,000 miles for $17.50, at a speed of three miles a minute — with cost including special pick-up and delivery in all U. S. cities and principal towns. Same-day delivery between many airport towns and cities. Direct service to scores of foreign countries. Rapid air-rail service to 23,000 off-airline points in the United States.

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CAB Roundup

Alaskan Service Expansion

Public Counsel V. Rock Grundman has recommended that the certificate of Ellis Air Transport of Ketchikan, Alaska, between Ketchikan and Klawak be amended to make Craig a terminal point and that the following intermediate points be certificated: Klawak, Kasaan, Hollis, Coning Inle, Rose Inlet, View Cove and Waterfall. He recommended that the application of Ketchikan Air Service be denied.

In its application Ellis asked several new routes in southeastern Alaska, including those between Ketchikan and Annette Island, Ketchikan to Prince Rupert, Ketchikan and Hyder, and between Ketchikan and Burroughs Bay. Grundman held that the majority of these routes were not justified.

Ketchikan Air had applied for two regular routes, one from Ketchikan to Prince Rupert, and the other from Ketchikan to Metlakahtla, in addition to an irregular route in Southeastern Alaska.

Detroit-St. Louis Non-stop

Public Counsel V. Rock Grundman has recommended that TWA's application for non-stop authority between Detroit and St. Louis be granted. Grundman held that the direct Detroit-St. Louis route would not result in substantial adverse effect on competing carriers. American and Chicago & Southern Air Lines opposed the application.

Pension Plan Outlined

Rowell C. Dunn, representing Alexander & Alexander, New York insurance firm, outlined the operation of National Airlines' employe pension plan at a hearing before Examiner Ross I. Newmann April 2 in which National asked reconsideration of its mail pay rate from Feb. 1, 1944.

National asks that the pension plan be given consideration as part of the company's operating expense. The Board disallowed the plan in its opinion Feb. 25, 1944, in which National's mail pay rate was set at 9½ cents a mile on and after Nov. 1, 1943. National claims that this rate is too low.

The present reopened proceeding also will set a rate of mail pay on National's new New York-Miami route.

Restoration Sought

United Air Lines has asked permission to resume direct flights to Walla Walla and Spokane, Wash., May 1. United suspended service to the two cities in 1942, at Government request, due to war-time shortages of commercial aircraft.

Interchange Hearing Delayed

The hearing on a proposed interchange agreement between Transcontinental & Western Air and Chicago & Southern Air Lines has been postponed indefinitely at the request of C & S. The hearing was tentitively set for April 30.

Carleton Putnam, C & S president, asked that the proceeding be postponed since his company was involved in at least 10 other CAB proceedings and that it would be impossible to prepare exhibits and participate in a hearing at this time.

Putnam pointed out that the interchange proposal was not something of immediate prospect, since it could not be inaugurated until C & S obtains additional equipment.

AA Files Notice

American Airlines has filed notice with the CAB that it proposes to inaugurate non-stop service between Oklahoma City and Tucson, Ariz., and between Oklahoma City and Phoenix, on or about July 1.

Non-Stop Service

Western Air Lines gave notification of its intention of inaugurate non-stop service on Route 19 between Pocatello, Ida., and Butte, Mont., and between Salt Lake City and Pocatello, effective April 1.

Extension Granted

An extension of two weeks has been granted parties in the Latin American case (Docket 525 et al) for filing briefs, with the deadline now set for April 23. Briefs have been limited to 50 pages.

Single Hearing Considered

Consolidation of four applications proposing service in the Cincinnati-New York area are under consideration for purposes of a single hearing, Chief Examiner Francis W. Brown, announces. Applications involved are:

TWA to include Cincinnati on Route 2 (Docket 221); American Airlines for a route between Cincinnati and New York (Docket 395); Chicago & Southern for a route between Memphis and Pittsburgh via Paducah, Evansville and Cincinnati (Docket 581); the portion of Eastern Air Line's application in Docket 1067 for a route between Pittsburgh and New York; that portion of Braniff Airways' application in Docket 1102 proposing service between Tulsa and New York via Cincinnati, Pittsburgh and Philadelphia.

Justice Recommends 2 Denials

The Department of Justice recommends that the applications of the two steamship companies in the CAB's South Atlantic case (Docket 1171 et al) should be denied on the grounds that sound public policy as expressed in the Civil Aeronautics Act "and in the repeated and uniform decisions of this Board (CAB) and of the courts, prohibits carriers engaged in other types of transportation from engaging in air transportation except under the restrictive conditions set forth in the statute."

"Those conditions are not fulfilled in the present case," the Justice Department brief states, "since neither of the steamship company applicants can use aircraft to public advantage in their operations as steamship carriers, and since competition would be restrained. Neither do the services proposed by the steamship company applicants constitute air services which would be supplementary, auxiliary or incidental to their steamship services."

The two steamship company applicants are Seas Shipping Co., and American South African Line, both operating in the area covered by their air applications. Seas Shipping seeks to operate scheduled air transportation between New York and Johannesburg, South Africa, and American South African between the same terminal points.

New Air Services

Airfreight to Mexico

American Airlines inaugurated Airfreight service between the United States and Mexico April 2 with three tons of cargo destined for Mexico City. The initial flight originated at LaGuardia Field.

Penicillin was an important part of the first international cargo load. Other materials were shipped by E. A. Squibb & Co., John B. Stetson Co., Coty, Inc., the Office of Inter-American Affairs, and Wyeth, Inc.

Burlington-Detroit Service

Yankee Skylines, Inc., was scheduled to inaugurate daily flight service between Burlington and Rutland, Vt., Buffalo, Detroit and return. Headquarters of the airline are at Burlington.

El Dorado Gets Service

The Civil Aeronautics Board has issued a temporary exemption order to permit Chicago & Southern Air Lines to serve El Dorado on a temporary wartime basis as an intermediate point on Route 53 between Pine Bluff, Ark., and Shreveport, La.

The order pointed out that the War and Navy Departments had requested the action on the ground that military requirements necessitate such service to El Dorado.

CAB Calendar

April 16—Oral argument on applications of Braniff Airways and T. E. Braniff for acquisition of control of Aerovias Braniff, S. A.

April 18—Oral argument on application of National Airlines for non-stop authority between Jacksonville and Miami, Fla.

April 23—Prehearing conference on applications in Kansas City-Memphis-Florida area (Docket 1051 et al).

May 28—Hearing on Southeastern States case (Docket 501 et al) (Tentative).

Alaska Office Official

The CAB has given its new Alaska office at Anchorage official stature by an order which provides that all documents authorized or required by the Civil Aeronautics Act may be filed in that office by Alaskan carriers, instead of sending such material to Washington. The order provided, however, that applications, motions, petitions and briefs to the examiner in formal proceedings filed through counsel having addresses outside Alaska may be filed with the Board in Washington, but that counsel should in such cases send a duplicate copy to the Alaska office.

Allowed 20 Days

Some 35 applicants appeared before Examiner Charles Frederick April 3 in a prehearing conference on the CAB's Middle Atlantic case (Docket 674 et al). Most of the parties asked that a hearing on the applications not be held before November, and asked that strictly local-feeder services be segregated from the so-called trunk applications for the purposes of hearing. Frederick said that the parties would be allowed 20 days in which to file amended and new applications in the proceeding. Following his recommendations to the Board, a consolidation order will be issued and a date for hearing set.

Counsel Backs National

Public Counsel Merle P. Lyon has recommended by brief that National Airlines be certificated for non-stop operations between Jacksonville and Miami. Lyon held that while there may be some diversion of Eastern Air Lines' traffic between New York and Miami and between Jacksonville and Miami, "the extent of such diversion has not been demonstrated to outweigh the advantages to the public by the proposed non-stop operation."

Oral Argument Notice

Oral argument on National Airlines application for non-stop authority between Jacksonville and Miami, Fla., will be held before the CAB April 18 (Docket 1709).

Mileage Chart Will Aid Calculation of Interline Air Express Revenues

Great circle distances between the larger cities of the United States are now being computed by the U. S. Coast and Geodetic Survey to enable the airlines to set up a permanent and fixed mileage chart for use in the distribution of revenues on interline shipments of air express.

The air cargo subcommittee of the Air Transport Association's air express committee has been engaged on this project for some time. When the mileages have been computed, they will be published by the Coast and Geodetic Survey in booklet form similar to the U. S. Pilot's series. As these mileages must be figured in pairs, it means that the special calculating machines of the Coast and Geodetic Survey will have to make approximately 72,900 computations involving the more than 270 certificated points on the domestic airline routes.

Members of the ATA subcommittee engaged in this work are: J. A. Wooten, American; W. C. Burks, C & S; E. E. Skinner, Eastern; F. R. Erickson, Northwest; C. N. Noble, PCA; W. A. Smith, TWA and Emery Johnson, of ATA.

PAA Completes 5000th Atlantic Hop for Army

Pan American Airways has completed the 5000th crossing of the Atlantic for the Army. The flight was made with a C-54N from Casablanca to Miami, carrying wounded from the European fighting fronts. The trip raised to more than 25,000,000 the mileage operated by Pan American's Africa-Orient division since its inception in November, 1942.

Pan Am's Africa-Orient division now averages 10 flights daily and more than a million miles a month from bases in New York and Miami. A total of 89,498 passengers were flown overseas by the Africa-Orient division from November, 1942, through January, 1945, and 23,481,705 pounds of express, and 7,135,100 pounds of mail were carried. Ton miles of express total 44,319,179, and ton miles of mail, 12,566,625.

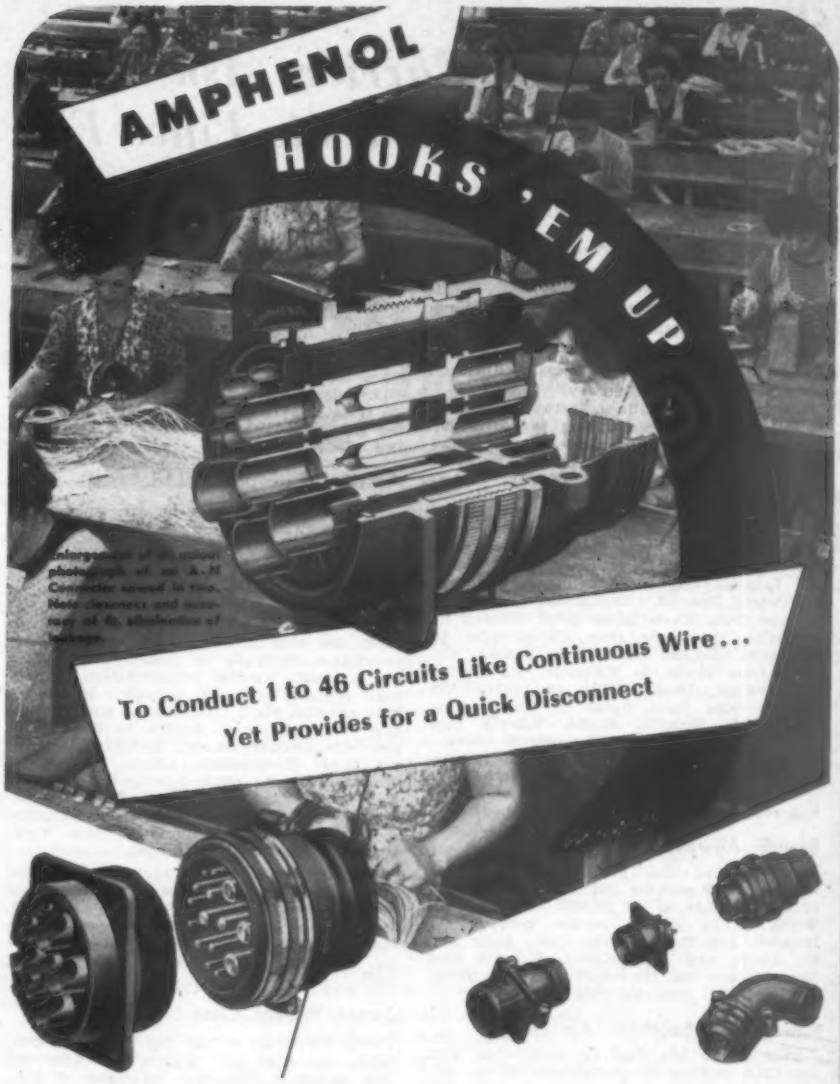
Insurance Committee Has Three-Day Meeting

The Air Transport Association's Insurance Committee met for three days recently in New York, to discuss:

Legislation dealing with workmen's compensation and public liability now pending before Congress with the ATA Legislative Commission.

Development of a deductable insurance contract, and to consider generally insurance problems incident to the transportation of air express with the ATA's Traffic Committee.

Details of an engineering research study into the transportation of hazardous material by air with Insurance Underwriters. The study will be conducted at Underwriters Laboratories, Inc., in Chicago, and will be underwritten by the various insurance companies presently writing the airline cover insurance.



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CAB Docket Section Reports:

Three Alaskan Carriers Ask Mail Routes; Five Domestic Lines File

THREE Alaskan air carriers last fortnight filed applications with the CAB seeking certificates for the carriage of mail over routes conforming with those recently recommended by the Postmaster General for such service.

Five domestic carriers filed applications for route extensions or amendments to their present certificates.

The following routes proposing Alaskan mail service were filed by:

Alaska Coastal Airlines, between Juneau and Ketchikan, via Petersburg and Wrangell (Docket 1812), between Juneau and Sitka (Docket 1813); Cordova Air Service, between Chitina and Chisana via Copper Center, Gokona, Christochina and Nabesna (Docket 1814), from Cordova to Anchorage via Valdez, Portage Bay, Nellie Juan, and Port Ashland (Docket 1815), Cordova to McCarthy, via Valdez, Chitina, Bremner, Long Lake, and between Chitina and Chisana via Copper Center, Gokona, Christochina and Nabesna, and from the terminal point Chisana by extending the route from Christochina to Fairbanks (Docket 1816); Wien Alaska Airlines, from Nome to Kotzebue, via Candle and Deering (Docket 1817), and extend its present route from Nome to Kotzebue to Kobuk via Noorvik, Kiana, Selawik and Shungnak (Docket 1818); extend Nome-Kotzebue route to Barrow via Kivalina, Point Hope, Point Lay and Wainwright (Docket 1819), and extend the Nome-Kotzebue route to Gambell (Docket 1820).

Braniff Airways

This carrier has filed two applications with the CAB seeking either new certificates or amendments to its present certificate on Route 50 to provide service between (1) Houston and Chicago, via Little Rock and St. Louis, and (2) between Houston and New Orleans via Galveston and Beaumont-Port Arthur. (Dockets 1798, 1799).

Chicago & Southern Air Lines

This carrier has filed an application with the CAB seeking an amendment to its certificate on Route 8 to extend it from the present terminal at Houston to (a) San Antonio, Tex., via Austin, and (b) from Houston to Brownsville, Tex., via Corpus Christi. (Docket 1825).

Delta Air Corp.

This carrier has filed an application with the CAB asking that Longview-Kilgore, Tex. (Gregg County Airport) be certificated as an intermediate point on Route 24 between Shreveport and Tyler, Tex. (Docket 1806).

Eastern Air Lines

This carrier has filed an application with the CAB seeking an amendment to its certificate on Route 47 to redesignate the present terminal point St. Louis as an intermediate point, and to extend Route 47 beyond St. Louis to Kansas City via Jefferson City and Sedalia, Mo. (Docket 1800).

Lineas Aereas Taca de Colombia

This carrier, of Edificio Vasquez, Bogota, Colombia, has applied to the CAB for a foreign air carrier permit for the transportation of persons, property and mail on both scheduled and non-scheduled flights between Bogota and Balboa, C. Z.; between Bogota and New Orleans, via Balboa, and between Bogota and Miami, via Caribbean points and/or Balboa and Central America. (Docket 1824).

Mid-Continent Air Lines

This carrier has filed three applications with the CAB asking for extension of its present routes (1) from St. Louis to the coterminal points, Detroit and Cleveland, via a combination of any or all of the following intermediate points: Decatur and Danville, Ill., Terre Haute, Lafayette, Indianapolis, Anderson - Macungie - Newcastle, and Ft. Wayne, Ind., and Toledo, O.; (2) from St. Louis to Chicago, via Decatur, Champaign-Urbana and Danville, Ill., and (3) from Kansas City to St. Louis, via Jefferson City and Columbia, Mo. (Dockets 1807, 1808, 1809).

Aviation Enterprises, Ltd.

This applicant has filed an amendment to its application under Docket 1520 to change the name of the applicant to Aviation Enterprises, Inc.

Buffalo Transit Co.

This applicant of 200 Broadway, Buffalo, N. Y., has filed an application with the CAB seeking a certificate of public convenience and necessity for the transportation of persons, property and mail between: Buffalo to Williamsville, via 2 intermediate points; Buffalo to Cheektowaga; Buffalo to Wende, via two intermediate points; Buffalo to Attica, via three intermediate points; Buffalo to East Aurora, via three intermediate points; Buffalo to Orchard Park, via one intermediate point; Buffalo to Lockport; Buffalo to Jamestown, and Buffalo to New York, via seven intermediate points.

The proposed routes approximate those now served by the applicant with a bus service. (Docket 1801). John G. Campbell, of the same address, and owner of all the stock of Buffalo Transit Co., filed an identical application at the same time. (Docket 1802).

James Walker Case

This individual of 216 7th St., King City, Calif., has filed two applications with the CAB asking a temporary certificate of convenience and necessity for the transportation of persons, property and mail in the Bakersfield-Sacramento-Stockton area.

One route would operate between the terminal points Bakersfield, Fresno and Oakland, via 18 intermediate points (Docket 1822), and the other between Sacramento and Stockton, via eight intermediate stops and 12 pickup points. (Docket 1823). All flights would be contact.

Coast Air Express

This applicant of New Orleans has filed an application with the CAB seeking approval for its operation of an airport, flying school and instrument school in addition to its proposals for the operation of any airline or which it may be certificated. (Docket 1805).

Lt. John T. Furth

This individual of 1235 Cave Ave., La Jolla, Calif., has filed an application with the CAB in the name of Marine Airways for certification for four routes in the New England area. The application states that the proposed operation would provide employment for 90 exservicemen, chiefly pilots and mechanics. Capitalization would be provided by personal credit and by credit guarantees assured under the "GI Bill of Rights."

Routes sought are from Boston to Bangor, via 20 points; Boston to Bangor, via 18 points; Boston to Burlington, via 16 points, and Boston to Burlington, via 20 points. A scheduled air mail and air freight pickup service is proposed. (Docket 1804).

Humboldt Air Lines

This applicant has filed an amendment to its application under Docket 1184 to change the name of the company to Jacob Goldman, doing business as Atlantic & Pacific Air Lines.

Los Angeles Airways

This applicant of 3055 Wilshire Blvd., Los Angeles, Calif., has filed an application for four routes in California for the transportation of mail and property and designed to provide a "complete local postal facility." Unconventional aircraft would be used.

The routes include two loops out of Los Angeles, serving 11 intermediate points; Los Angeles to San Pedro, via four intermediate points, and Los Angeles to Santa Ana, via five intermediate points. (Docket 1821).

J. E. G. Rogers, Ltd., Inc.

This individual has amended its application under Docket 1675 to change the name of the company to Hoosier Air Freight Corp.

F. O. Stromberg

This individual of 409 First St., Havre, Mont., has applied to the CAB for a certificate of convenience and necessity for the transportation of persons, property and mail between Chicago and Seattle, via Milwaukee, St. Paul-Minneapolis, Fargo, Grand Forks, Minot, Williamson, Glasgow, Havre, Cut Bank, Kalispell (Mont.), Spokane, Wenatchee, Wash. The application also seeks a route from Havre to Great Falls as an "off route."

Stromberg states that he is presently engaged in the trucking business as United States Transfer & Storage Co., operating from Great Falls to Glasgow, via Havre, and west of Cut Bank, Mont. (Docket 1811).

CAB Orders Affecting Air Carriers

3553—Permitting Western Air Lines to inaugurate mail and property service on Route 68 between Denver and Los Angeles.

3554—Temporary exemption order permitting Chicago & Southern Air Lines to serve El Dorado, Ark., on Route 53.

3555—Dismissing complaint of Cordova Air Service (Docket 1576).

3556—Suspending discount tariffs on Universal Air Travel Plan and government travel, and ordering investigation and hearing.

3557—Granting temporary exemption order to Delta Air Corp., to use Dayton, O., in lieu of Cincinnati because of flood conditions at the latter point.

3558—Dismissing applications of Des Moines Flying Service (Docket 829); Maxwell Elmer McCornock (Docket 1273); North American Airlines (Docket 1601); Northern Airlines (Docket 1602); Fliteways (Docket 1683).

3559—Dismissing petition of Delta Air Corp., for temporary non-stop authority between Meridian, Miss., and New Orleans, La.

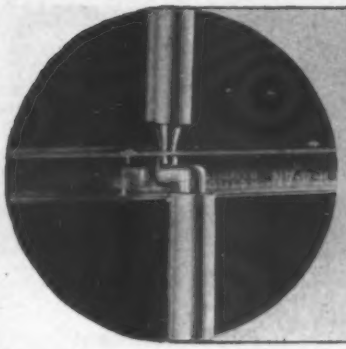
3560—Dismissing application of Northern Airlines (Docket 1603).

3561—Dismissing application of North American Airlines (Docket 1687).

3562—Dismissing application of F. X. Bowman (Docket 1010).

3563—Approving agreement between United Air Lines and Mid-Continent Airlines for lease of a station and other facilities at Kansas City.

3569—Assigning applications of National (Docket 1596) and Eastern Air Lines (Docket 1595) for hearing April 5.



DO'S *and* DON'TS
for
Resistance Welding Machines and Operations

Do's

1. Clean and tighten all electrical connections in the secondary circuit regularly.
2. Protect welding transformer slides, bearings and other parts from flash particles.
3. Keep the welder throat area to the minimum permissible dimensions.
4. Design welding fixtures and clamps with non-magnetic materials whenever possible.
5. Lubricate the resistance welding machine, motor, gears and slides at periodic intervals.
6. Clean all air or oil filters regularly.
7. Keep leather cup washers in air cylinders soft and pliable with light motor oil.
8. Calibrate all pressure applying mechanisms so that the exact welding pressure is always known.
9. Use proper capacity welding machine for the job.
10. Adjust the welding machine properly with the current initiating devices so that the current cycle is spaced midway in the pressure cycle.
11. Clean either chemically or mechanically all material to be welded that has dirty, scaly, oxidized or otherwise contaminated surfaces.
12. Provide suitable fixtures for holding the work in position prior to applying electrodes.
13. Provide rigidity in the welder arms and holders to prevent skidding of the electrodes, wheels or dies under pressure.

Don'ts

1. Don't permit flash particles to accumulate on the welding transformer.
2. Never use poorly maintained resistance welding equipment.
3. Do not use a long welder arm extension or a wide arm separation unless the parts to be welded necessitate it.
4. Avoid placing or fastening steel parts or fixtures in the throat area of the welding machine.
5. Shun lubricants which are not recommended by the welder manufacturer.
6. Don't use air operated machines when the oil bowl in the air line is empty.
7. Never permit oil or grease to come in contact with the transformer winding, electrical wires, or connections.
8. Never permit sliding pressure members to become too tight or jammed, since this will increase the frictional forces and inertia of the moving members.
9. Avoid using a low capacity welder for heavy welding jobs.
10. Do not allow welding current to be applied before full pressure is on work, or permit pressure release before the welding current is cut off.
11. Never weld unclean metals, scaly stock, or metals with poor surface condition.
12. Don't use welding tips, wheels or dies to form or shape parts in the welder.
13. Never apply the electrodes to the work with a hard impact or hammer blow.

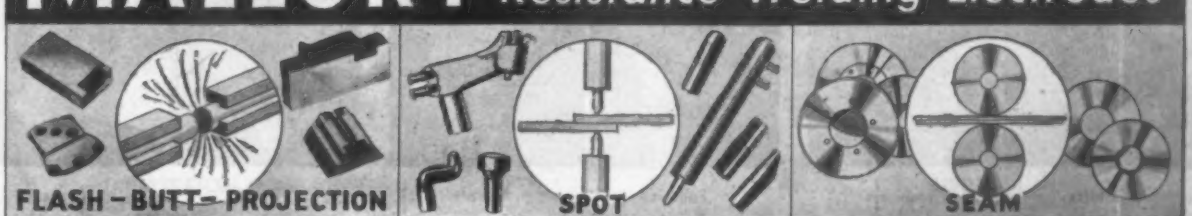
DO increase production by using Mallory Standard Resistance Welding Electrodes —spot welding tips and holders. Consult us for seam welding wheels, flash, butt and projection welding dies for your particular application. Write for your copy of the electrode catalog and the Mallory Resistance Welding Data Book sent gratis to resistance welding engineers when requested on company letterhead.

One of a series—the entire series mailed at your request.

P. R. MALLORY & CO., Inc., INDIANAPOLIS 6, INDIANA

P. R. MALLORY & CO. Inc.

MALLORY *Standard Resistance Welding Electrodes*



Storie Dunsmore

Airline Personnel

Hopp Skannal

Roos Snell

Cady Gibson

Stark Cuniff

Hatch Bohl

Operations

I. C. McInnis has been appointed director of operations Research for American Airlines. He replaces **Gage Mace** recently promoted to manager of operations, Los Angeles.

Capts. J. D. Storie and L. L. Dunsmore, recently appointed check pilots for Trans-Canada Air Lines in preparation for its 1945 expansion program, will conduct an intensive training program with headquarters at Winnipeg, R. C. A. F. personnel is included among the airline's recruits.

Betty Stark and **Madeline Cuniff,** former passenger service representatives, are the first two women stewardesses to work on the transatlantic Clippers being assigned to Pan American Airways' New York-Bermuda run.

Capt. Audrey D. Durst, whose aviation career encompasses barnstorming in the early days to piloting the 42-ton Clippers, recently received his 15-year service pin from Pan American Airways.

Traffic

Robert H. Ebbitts Jr. has been appointed traffic manager at New York for Northeast Airlines, preparatory to the opening of Northeast non-stop service between Boston and New York scheduled to begin May 1.

Appointment of **James L. Snell** as district traffic manager for United Air Lines at Spokane, and **Roy Roos** as traffic manager at Tacoma has been announced.

Bradford S. Gibson has been named DTM of American Airlines in Dallas, leaving his post as assistant DTM at Detroit.

Public Relations

George P. Saunders has begun his duties as public relations director for Western Air Lines with headquarters at Los Angeles. He formerly was public relations officer in Washington for the Aircraft Production Board, WPB Aircraft Division, and the Philippine Government.

Jay C. Abbott has been appointed manager of the news bureau to be established in New York by Pennsylvania-Central Airlines. He previously was associated with Douglas Aircraft Co. and American Airlines.

Miscellaneous

Lt. Col. Harry W. Hopp, of Columbus Station, Ohio, who formerly flew the Chicago-New York section of United Air Lines' coast-to-coast route, has been named head of the Air Transport Group of the Ninth Air Force.

Harry L. Drake, who flew as a radio officer aboard the Clipper of Pan American Airways across the North Atlantic, recently completed 15 years with the company.

Lt. Col. Charles F. Skannal, of Denver, who flew United Air Lines' Eastern Division nine years prior to 1942, commands the Western Division of the India-China Wing of the Air Transport Command.

Lt. Col Joseph P. Bohl, also from United Air Lines' Eastern Division, has been named executive officer at Rosecrans Field, St. Joseph, Mo., a base of the Ferrying Division of ATC.

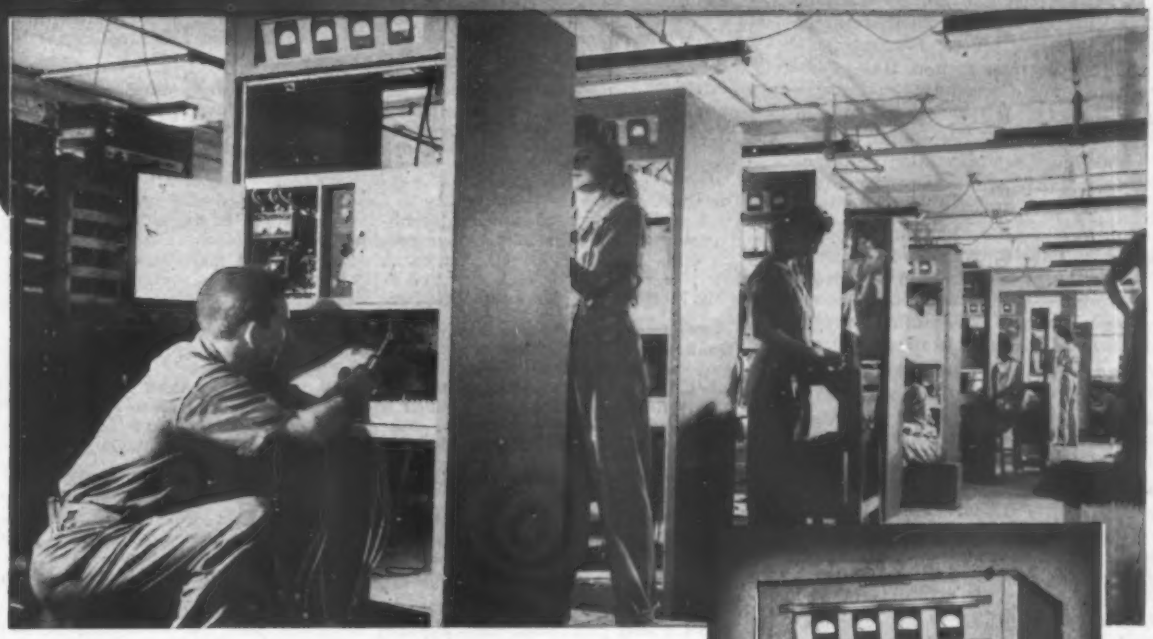
Northwest Airlines' plans for serving Detroit and New York moved ahead with the appointment of flight control and meteorology chiefs in New York. **T. W. Cummins,** named flight superintendent of the eastern area, extending from Chicago to New York, assumed his duties April 1. **Frank**

Ebbitts Saunders

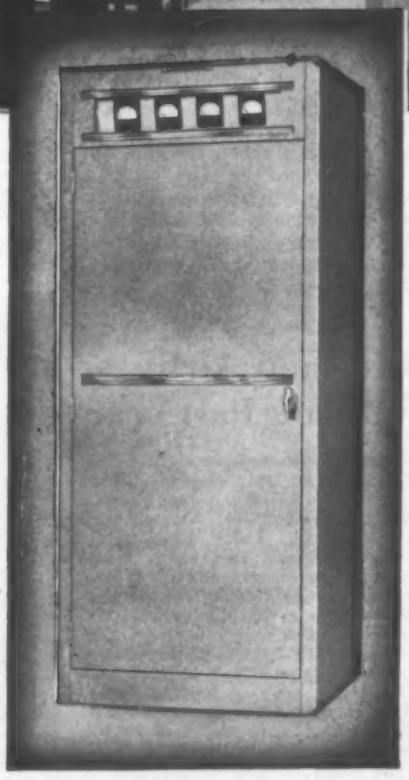
Fellows Abbott

Durst Drake

"Line Production" Experience IN RADIO MANUFACTURING



From Wilcox's war experience, as one of the largest manufacturers of radio communications equipment, has come many new products... a completely modern mass production factory... a trained engineering staff... plans and the knowledge needed for both war and peacetime products of highest quality. Look to Wilcox for leadership in radio communications equipment!



Model 50A Modulator — The 1600 watt 50A Modulator, shown at right, may be used for transmitter modulation, or high-powered audio needs.

WILCOX ELECTRIC COMPANY, INC.

Manufacturers of Radio Equipment

FOURTEENTH AND CHESTNUT — KANSAS CITY, MISSOURI

Martin, appointed chief meteorologist at New York, will begin his duties May 1. **M. J. Costello, L. P. Edwards** and **C. S. Hadley** will be transferred to New York as flight superintendents. **George A. Benson** has resumed his duties as flight superintendent at Minneapolis. **Dudley Beresford** has become chief meteorologist at Minneapolis. Cummins will be succeeded as chief flight superintendent for the northern region by **Carl W. Griffin.**

H. H. Cady has been named assistant to **R. H. Purcell,** vice president-treasurer of Continental Air Lines. Formerly acting chief of the rates section, CAB, Cady will handle general accounting matters.

Lt. George E. Hatch, USNR, United Air Lines' traffic official on military leave, has been named transportation officer of Naval Air Transport Service Squadron 3, the Navy's cost-to-coast airline division.

Arthur M. Ehler has been named special assistant to **Paul R. Whiteford,** assistant purchasing agent for the Latin American Division of Pan American Airways, based in Miami. Ehler was formerly with PAA's general accounting office.

H. D. Fellows of New York, market analyst of Air Cargo, Inc., has been named to a similar post with TWA. He will be senior analyst in the marketing division of TWA's Cargo Sales Department.

Harry S. Pack, director of functional engineering for Pennsylvania-Central Airlines, has been elected chairman of the newly formed Passenger and Cargo Handling Equipment Committee of the Air Transport Association.

William A. Peck, as newly appointed special assistant to **Arch S. Galbraith,** purchasing agent for the Latin America Division of Pan American Airways, will coordinate all activity relative to the location and identification of PAA capital assets of the Division, as well as look after government equipment in the Africa-Orient Division.

Airline Commentary

DEAR E. B.—You're a long way from home but thought you might be interested in hearing about a trip I made recently on Compania Aviacion de Mexico, S. A. This affiliate of Pan American Airways operates quite a network of air routes in Mexico, including the international route between Mexico City and Los Angeles. It was the latter route on which I flew.

CMA has been having an eight-day strike of its pilots during which not a ship left the ground. The company won when the Secretary of Labor ordered the pilots back to work. The pilots gained some salary increases but lost on the closed shop demand, a demand, incidentally, which the pilots in the U. S. A. have never sought.

The CMA DC-3 from Mexico City to Los Angeles leaves at 7 A.M. which necessitates a 5 A.M. awakening because considerable time is needed at the airport for immigration and customs. Despite all the Governmental red tape (and it's no worse than at the U. S. end) the CMA people handle things very well and efficiently. Most of my fellow passengers were Mexicans and I noted quite a bit of cargo on board—including big boxes destined for San Francisco, and some tires.

Breakfast was fine—scrambled eggs and ham. The countryside west to Guadalajara and Mazatlan is mountainous and dry, much like that of our western states. The trip was smooth. The Mexican crew was good. When lunch time came the piece de resistance was nothing less than filet mignon and plenty delicious. But what seemed truly extraordinary in these days was when the steward passed out cigarets and matches to each passenger! But then, it was in Mexico where steaks, cigarets and Scotch are abundant.

One smart new feature of CMA service is an Esso news sheet with the latest news printed in Spanish and English.

At Mexicali, last stop before crossing over to the U. S., CMA has a very fine new station building with free coca colas awaiting each passenger. And it should be noted that there is a very efficient (as well as charming) girl supervisor, speaking excellent English as well as Spanish, who did one of the smoothest passenger-handling jobs I've ever seen.

It's a long trip, from early morning to almost dusk, but it's a pleasure to report that my first CMA flight was as entirely flawless as any airline trip I've ever made, and that's meant to be a real compliment, CMA recently has installed some runway lights for night landings and its radio d.f. equipment is relatively new. Not too much can be said for several of the landing fields, but the CMA airport buildings range from adequate to quite good.

Hope you're doing well by yourself on the other side of the globe. Salud.

W. W. P.

U. S., English Built Planes in Iceland— Two De Havilland Dragon Rapide biplanes and one Beechcraft 18-D aircraft, shown here on the aerodrome at Akureyri on the north coast of Iceland, helped Iceland Airways, Ltd., carry 4330 passengers in 1944.

Two Iceland Airlines Busy During Past Year

Two Iceland airlines, Iceland Airways, Ltd., and Skyways, Ltd., carried a total of 4,838 passengers and flew a total of 386,450 kilometers during 1944.

Iceland Airways, Ltd., used three planes—one Beechcraft 18-D with a capacity of eight passengers and pilot; two De Havilland Drago Rapide twin-engine land biplane with a capacity each of six to seven passengers and pilot; and one Consolidated PBY-5 (Catalina flying boat), now being modified to carry 22 passengers and a crew of four to five.

The line carried 4,330 passengers and 4,445 kilograms of mail, and flew 298,700 kilometers in 1944. B. G. Gislason is chairman of the board of directors and Orn O. Johnson is managing director and chief pilot.

Skyways, Ltd., headed by Kristjan Joh Kristjansson, has one Grummen JRF 5 with a capacity of seven passengers and crew of two, and one Stinson SR 8 B with a capacity of three passengers and pilot. The line carried 508 passengers, and 5,434 kilograms of mail and freight, and flew 87,750 kilometers during the year. Twenty ambulance flights were made. Headquarters of both airlines are in Reykjavik.

THE BELL HELICOPTER

A new kind of flying

THOUSANDS of inquiries demonstrate an enthusiastic interest in the new Bell Aircraft helicopters.

One reason is that the helicopter provides a kind of flight we have always sought. In a helicopter, you can go straight up and down, you can hover, you can go sideways or backwards. All these things, impossible in a conventional airplane, can be done in a helicopter with safety and precision control.

And that accounts for the questions . . .

THE QUESTION OF WHEN . . . It is hard to draw a line between enthusiasm for the helicopter and realistic thinking on when helicopters will be available.

Bell Aircraft believes in the helicopter, believes in it as a practical aircraft, a safe aircraft, an aircraft with an important post-war future. We, too, are impressed by what it can do. In addition to its other advantages, for example, a helicopter doesn't need elaborate landing facilities and airports, and in "helicopter weather" with ceiling and visibility near zero, the helicopter can fly because of its ability to operate at low, safe speeds.

But the fact remains that helicopters, of the kind we expect to market, are not available now. Aside from the requirements of war work, which at Bell Aircraft come ahead of everything else, a lot of developmental work remains to be done.

And so it will be after the end of the war—say, a year or more—before Bell helicopters are available. But—helicopters *are* coming.

THE QUESTION OF COST . . . How much will a helicopter cost?

That depends on the kind and size of helicopter built, the volume of production and many other things.

The first Bell helicopters, however, will not be in the "low price car" field.

This means that the first helicopters will probably be sold to commercial and industrial concerns which have a need for them and which will find it economical to buy helicopters for business purposes. For such uses, the cost of the helicopter will be of less importance than its utility.

Low-priced helicopters will come—with mass production and further development.

ABOUT STABILITY . . . One of the most important characteristics of a helicopter is stability. The Bell Aircraft helicopter has it—engineered stability—through the use of a patented stabilizing bar which acts much like a gyroscope.

WHAT CAN YOU DO WITH A HELICOPTER?

Bell Aircraft feels that the helicopter will develop through various stages.

First, it will be used by industrial concerns that need it and can afford maintenance facilities and professional pilots.

Second, the helicopter will get into other commercial channels when circumstances make it possible to use them more widely.

Third, and later on, the helicopter will be used by sportsmen pilots and others who want safe, dependable air travel regardless of terrain conditions and despite poor weather. And finally, helicopters will get into the general market.

Bell Aircraft does not believe that the helicopter will compete with fixed-wing planes, but rather that it will open up a new and still untapped field of flying, a new dimension of flight.

AND IN CONCLUSION . . . We probably haven't answered all your questions. But we have tried to tell generally how helicopters work; what they can be used for; and how we think about them.

If you would like to know more, a booklet giving details regarding the Bell helicopter will be mailed without obligation. Write the Bell Aircraft Corporation, 2050 Elmwood Avenue, Buffalo 7, New York.

★ *Buy War Bonds and Speed Victory* ★

Specialized uses for the helicopter are many and varied. For example:

Suburban ambulance service | **Commuter service** | **Forest fire control** | **Pipe line patrol** | **Coast Guard rescue work and disaster relief**

Also for geological survey work, crop dusting, short hauls for mail, short hauls for commercial cargoes, department store rural deliveries, feeder lines for commercial air lines, mining work where the terrain makes access difficult, laying cables and wires, personal transport to and from places which lack air terminal facilities, and many other uses.

MEMBER AIRCRAFT WAR PRODUCTION COUNCIL...EAST COAST, INC.

BELL *Aircraft*

PACEMAKER OF AVIATION PROGRESS

NIAGARA FRONTIER DIVISION
Buffalo and Niagara Falls, N. Y.
Airacobra (P-39) and Kingcobra (P-63)—Fighters
Airacomet—America's First Jet Propelled Plane
The Bell Helicopter

ORDNANCE DIVISION
Burlington, Vt.
Flexible Gun Mounts and other ordnance materials

GEORGIA DIVISION
Marietta, Ga.
B-29 Boeing Designed Superfortress

© Bell Aircraft Corporation

Multiple-Wheel Design Aids Tire Life

Other Advantages Are in Safety, Servicing and Ability Of Runways to Support Giant Transports

By Sydney Carter

WHEN A PLANE DESIGN calls for a 56-in. outside diameter or larger tire, the manufacturer would do well to consider redesigning it for a multiple-wheeled undercarriage in the opinion of Maj. Frederick Grimm, director of the Rubber Research Branch of the Air Transport Command, whose rubber conservation program has already brought about a 29.5 per cent prolongation in the life of ATC tires and tubes.

The multiple-wheeled undercarriage offers many advantages not only from the standpoint of tire life, but also in respect to such factors as weight, tire cost, safety and servicing—all matters of vital import to the airline operator. What's more it may play an important part in the ability of airport runways to support some of the giant transports and bombers now on the drawing boards.

Comparative figures show that when an outside tire diameter of 56 in. or more is reached, two smaller tires will not only cost less than one large one, but they also will support greater loads for less actual weight of tire. By way of illustration, the single-wheel C-87 Liberator Express with a gross weight of about 60,000 lbs. is equipped with 56-in. 1900x27 smooth contour tires, while the dual-wheel C-54 Skymaster, which operates at gross weights up to 68,000 lbs. uses 46-in. 1550x20 low pressure tires. And while the Liberator tire must be of 16-ply construction, the C-54 can use 12-ply tires with safety, resulting in an overall saving in weight and cost. Still further advantages of the multiple smaller tires are that they provide greater safety against blowouts, are easier to handle in servicing, and provide greater braking area and weight distribution on the runway.

The extent to which the multiple wheel landing gear may ultimately be carried is exemplified in some figures compiled by one of the rubber companies for a possible 300,000 lb. project. Three possible wheel and tire combinations are proposed. In the first eight 65-in. tires would be employed. Total weight of tire, tube, wheel and brake comes to 895 lbs. per wheel or 7160 lbs. per plane. In the second arrangement there are 16 17.00-20 tires, and weight per wheel drops to 345.6 lbs., and per plane to 5529.6 lbs. Increasing the number of wheels to 24 and using 47-in. tires reduces the weight per wheel again, this time to 278 lbs., but raises the weight per plane to 6672 lbs.

The eight-wheel arrangement provides the greatest total brake capacity, 68,000,000 ft. lbs. as against 56,160,000 for the 16-wheel arrangement and 50,400,000 for the 24-wheel, but yields the lowest total contact area with the runway—397 sq. in. per tire as against 280 per tire for the 16-wheel and 270 per tire for the 24-wheel. Likewise the eight-wheel arrangement shows the greatest difference between loaded radius and flat tire radius, and the 24-wheel the smallest, an important safety consideration.

Wheel arrangements for heavy aircraft likewise are being studied by the British and some of the data they have compiled is presented in the accompanying table, from which the following conclusions have been drawn:

Advantages of multiple tire equipment are reduced tire diameter, reduced energy absorption, reduced deflection, reduced weight of tire and wheel, reduced kinetic energy, reduced free air capacity, greater safety in the event of tire failure, probable easier servicing in view of lighter weight. Disadvantages are a greater number of tires to retract, difficulty of designing so that all tires are evenly stressed, difficulty of maneuvering tandem tires in very confined spaces such as a hangar.

The British study further points out that the effect of multiple wheels on undercarriage design and weight, and the means of retraction to be used will have to be taken into consideration before any hard and fast rules can be formed.

New tire as well as undercarriage designs also will play an important part in prolonging tire life after the war. An example of this is the Goodrich Rotovane tire which has been tested by the ATC

Wheel Arrangements for Heavy Aircraft

Wheel Arrangement	A	B	C	D	E	F	G
Wheel Arrangement							
Design Considerations							
Tire Diameter	Large	About 75% of Arrangement A			Just over 50% of Arrangement A		
Tire Width	Large	About 75% of Arrangement A - More to Retract			Just over 50% of Arrangement A - More to Retract		
Energy Absorption and Deflection	Large	About 75% of Arrangement A			Just over 50% of Arrangement A		
Total Weight of Tires and Wheels	Large	About 80% of Arrangement A			About 65% of Arrangement A		
Total Kinetic Energy at 100 mph	Large	About 75-80% of Arrangement A			About 55-60% of Arrangement A		
Total Free Air Capacity	Large	About 77% of Arrangement A			About 50% of Arrangement A		
Tire Load to Weight Factor	Low	About 25% Greater than Arrangement A			About 60% Greater than Arrangement A		
Service Considerations							
Stresses due to One-Sided Landing	Taken squarely on 1 tire.	Taken evenly on 2 tires, if pivoted.	1 tire takes most of extra stresses	Taken evenly on 2 tires, if pivoted.	2 tires take most of extra stresses.	1 tire takes most of extra stresses.	Taken evenly on 4 tires, if pivoted.
Turning and Maneuvering	Satisfactory	Satisfactory	Satisfactory	Not turnable in confined space	Satisfactory	Satisfactory	Not turnable in confined space
Servicing	Heavy to man-handle. Large amount of air required.	Each unit is only about 40% of Arrangement A in weight. Each unit requires about 40% of air in Arrangement A.			Each unit is only about 15% of Arrangement A in weight. Each unit requires about 14% of air in Arrangement A.		
Safety Aspect	Depends on 1 tire. Big axle drop. Danger of damage to aircraft in case of deflation.	Safer. Very small axle drop in case of deflation. Punctures more likely.			Safest. Very small axle drop in case of deflation.		
Manufacturing Considerations							
Weight	Heavy to handle.	Easier to handle.			Easier to handle.		
Plant	Special plant required.	Special plant may be required.			No special plant required.		

"I was a passenger on the C-97..."*
"We reached 30,000 feet...and stayed at that altitude until east of Pittsburgh where the let-down for Washington was started. Outside temperatures were around 45 degrees below zero. Inside the plane, *thanks to efficient operation of the cabin pressure equipment, the altitude was constant at the equivalent of 8,000 feet and the temperatare was comfortable for writing without gloves.*"
* The flight on January 9th, 1945 . . . in which a Boeing C-97 crossed the U. S. in 6 hours.

Yes, the New Age of Flight is *already* here...made possible by refinements such as the pressurized cabin. The cabin pressure controls of Boeing's B-29 and C-97 were engineered, developed and are being produced by AiResearch Manufacturing Company, Los Angeles and Phoenix.

"Where Controlled Air Does the Job" **Automatic Exit Flap Control Systems • Temperature Control Systems • Engine Air Intercooling Systems • Cabin Pressure Regulating Systems • Supercharger Aftercooling Systems • Engine Oil Cooling Systems**

AiResearch
DIVISION OF
THE GARRETT CORPORATION

and is now being tested by Eastern Air Lines, Pennsylvania-Central Airlines and American Airlines. Here special flaps or vanes are provided on the side of the tire which are opened by the airstream and pre-rotate the tire before it strikes the ground, thus reducing the initial scuffing action. On a DC-3 this pre-rotation amounts to approximately 80 per cent of the landing speed.

Another special design is the so-called snow and ice tire with a coil spring insert. Transcontinental & Western Air used some of these tires in its Inter-Continental Division, and reported 150 landings per tire as against 104 on the conventional type.

But new design is not the only way in which tire life can be extended with consequent reduction in cost and increase in safety. The 29.5 per cent prolongation of tire life achieved by the ATC, for example, has been accomplished almost entirely through the setting up of procedures for proper maintenance, storage and usage. Particular effort was made with all personnel to obtain: increased and sincere interest in the conservation of rubber; improvement in storage facilities; maintenance of proper pressures; prompt attention to small cuts and breaks; removal of foreign objects in tires; cleaning of runways, taxiways and roads; improvement in runways, taxiways and roads; use of tire covers to prevent oil and grease damage; and regular cleaning of tires to remove oil and grease.

Two points which were especially emphasized were instituting better inspection of aircraft tires to prevent premature removal, and the maintenance of specially trained men for tire installation. It was stated that premature removal of tires with slight cuts not materially affecting their serviceability or safety was believed to be the largest single contribution to rubber consumption. In the matter of installation it was found that 35 per cent of all tires received for inspection and repair were damaged due to malpractices.

Avoid Premature Removal

While many of the measures taken by the ATC were designed to meet conditions that would not be encountered by commercial operators, one in particular has universal application and that is the requirement that tire pressures be determined accurately and be taken at least once a day. In general, the correct tire pressure is based on a 35 per cent deflection under load, and it is important that this be based on the maximum rate at which the plane is to be operated rather than on average weight, if even tread wear is to be obtained. Another important step taken by the ATC in this connection is the continuous checking of pressure gages against a master gage for accuracy, since the average gage will change with use and will give readings varying from two to 10 lbs. under.

Even the pilot can play an important part in prolonging tire life by making rolling rather than locked wheel turns. At some airports turntables have been installed recently to cut down on this source of tire wear, but they only take care of certain points, and it is just as easy to damage a tire with too sharp a turn from the taxiway into the runway as it is to damage it in the loading area.

'Slick Spot' Airport Is New Approach to Tire Saving Problem

A new approach to the aircraft tire conservation problem is the "Slick Spot" airport designed by Dr. Robert C. Burt of Pasadena, Cal., on which patents are now pending. Dr. Burt's plan is to put the burden of tire conservation on the airport designers rather than the plane operator or tire manufacturer.

This is accomplished by putting a slick spot at the approach end of the runway. In landing, the pilot follows normal procedure and lets the plane down so that the wheels touch the slick spot at least 200 ft. before the plane runs onto the regular runway surface. This causes the wheels to start rotation gradually because of the low coefficient of friction, and by the time the slick spot is passed, the plane is rolling normally along the landing strip.

To create the slick spot, the surface of the runway at the approach end is treated with an asphalt sheet similar to the early types of asphalt pavement on which autos skid so easily. The sheet should be from 600 to 1000 ft. long, and will seal the surface watertight as well as reduce the roughness to a minimum. A sheet of water about ⅛-in. thick flows across this from a distributing header along the high side, and is collected by a grating covered channel at the lower side. This channel delivers the water to a sump from which a small irrigation pump takes water and supplies the header. The water not only acts as a lubricant, but also as a coolant and a brake.

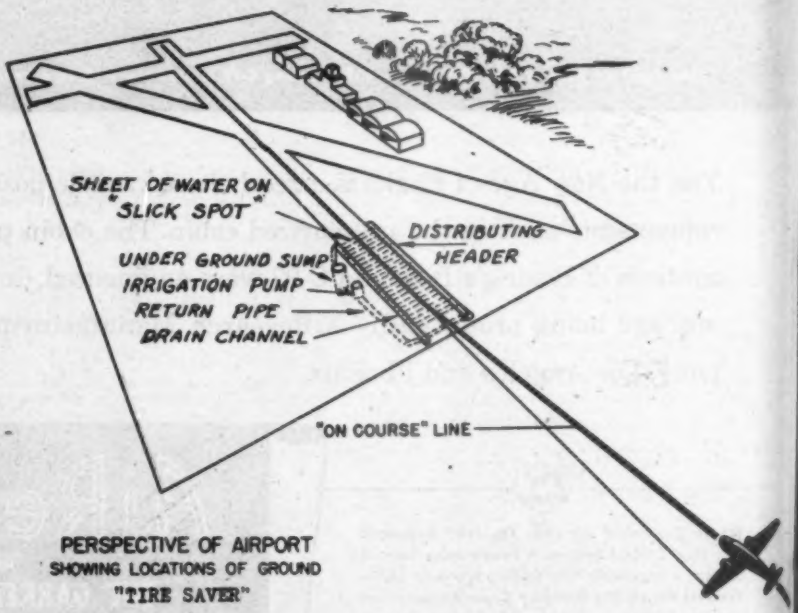
The "Slick Spot" principle was tested recently at Lockheed Air Terminal with a C-60 transport. The 42 x 16 tires were accurately weighed before and after a certain number of regular landings, and again before and after a certain number of landings on a part of the runway which was sprinkled by a hose. The loss in rubber on a dry landing was found to be 431 percent of the loss in a wet landing, thus saving nearly $4 worth of rubber on each landing on this size tire. Furthermore, this wet spot was not really slick, but was coarse abrasive crushed rock in a Topeka mix.

Al Gillhousen, former air carrier pilot, who assisted in the tests, said that because of the limited area which could be wetted with the hose, he was forced to "fly it in" to hit the spot at all. "Normally," he said, "such landings would be so rough that I would feel compelled to apologize to passengers, but the water made them all a 'greased on' landing. I am sure the above figures are conservative on tire wear, but the big item is the cutting down on the shock loads of the aircraft, thereby increasing the life of the aircraft structure. It also increases passenger comfort for it definitely tends for 'greased on' landings to a degree that is highly noticeable."

Original estimates prepared by Dr. Burt for installation of his system at Lockheed Air Terminal showed that initial cost would be approximately $15,000, but that the system would pay for itself approximately three times a year. As yet the Lockheed Terminal has taken no action on these estimates.

Consolidation Agreed Upon

A consolidation has been agreed upon by the managements of Rohr Aircraft Corp. and International Detrola Corp. under which Rohr stockholders will be offered one share of International Detrola common for each one and one-half shares of Rohr common. The two companies had aggregate sales of $106,529,369 in 1944. A joint statement by the presidents of the two companies pointed out that the proposed merger will make Rohr the first Pacific Coast Aircraft company preparing to fabricate automotive parts to serve western assembly plants.



PERSPECTIVE OF AIRPORT SHOWING LOCATIONS OF GROUND "TIRE SAVER"

SIKORSKY HELICOPTERS

with the armed services

Approximately a hundred and fifty Sikorsky helicopters have joined the armed forces. They are serving with the U. S. Army, Navy and Coast Guard, R. A. F. and the Royal Navy.

Sikorsky Aircraft, having completed delivery of two quantity orders for the R-4 type, is now concentrating on production of higher-powered types.

SIKORSKY AIRCRAFT BRIDGEPORT CONNECTICUT

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

New Equipment

Electronic De-icer Timer

Eclipse-Pioneer Division, Bendix Aviation Corp., Teterboro, N. J., has developed a new electronic de-icer control which successfully controls the de-icer system for both rate of accretion and texture of ice formation. It is designed for use in conjunction with a manifold - solenoid de-icer system, and provides either automatic or manual remote control of de-icer boot operation. The new unit measures 8⅞ x 6-5/16 x 3¾ in. and weighs only 6.5 lbs.—a weight saving of 10 lbs. over previous units.

Flexible Shaft Angle Drills

Zephyr Manufacturing Co., Inglewood, Cal., now is offering a complete line of flexible shaft angle drills. It includes both 18-in. and 30-in. flexible shafts coupled to 45, 90 or 360 degree angle drills. The flexible shafts have a piano wire stress-relieved core encased in oil-resistant rubber and are fitted with oiler-type bronze bearings.

Portable Engine Oil Filter

Hilliard Corp., Elmira, N. Y., has announced a new portable aircraft engine oil filter known as the Hilco Hyflow. Used oil is drained directly from the engine into a dirty oil tank, from which it is withdrawn by a gasoline engine driven pump and forced through an automatically controlled gasoline preheater before passing through a battery of large filter elements from which it is delivered to a clean oil tank. The gasoline engine also drives a large pump to withdraw the oil from this tank and deliver it back to the engine. A meter is installed in the clean oil line to measure the oil going back to the engine.

Hilco Flite-Filter

A filtering unit which can be attached to aircraft engines to filter oil while the plane is in flight has been developed by Hilliard Corp., Elmira, N. Y. Known as the Hilco Flite-Filter, it measures 6 x 17 in. and weighs only 15 lbs. including oil contained in the housing.

New Fighter Camera Application

Fairchild K-25, 24-volt cameras are now being mounted on Army fighters with a special bracket fixed to the jack pad and the bomb shackle sway brace to provide high speed reconnaissance on ground strikes. The bracket is shock-padded with sponge rubber and has a special arm extending forward which holds a clevis and allows the camera to be raised or lowered for bore-sighting. A special fairing, held in place by three fasteners and lined with sponge rubber, completes the installation. The camera will take 50 4x5 in. negatives in 20.8 seconds.

Night Fighter Panel

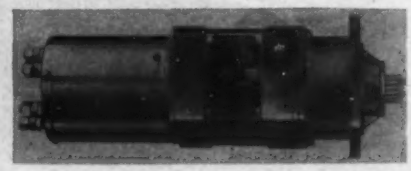
Libbey-Owens-Ford Glass Co. has developed a bullet-resistant glass panel for Corsair fighters which is of such high precision quality that it is used directly as a gunsight reflector. It is made of laminated plate glass 1½ in. thick and weighs approximately 50 lbs.

Aircraft Cabin-Air Filter

An aircraft cabin-air filter capable of passing 1250 cu. ft. of air per minute with a pressure drop of less than ½-in. H20 in a given area has been announced by Filters, Inc., Glendale, Cal. The unit measures only 20 sq. ft. and weighs only 10 lbs., yet contains approximately 64 sq. ft. of filtering area. An all-wool felt glove is fitted over 31 fingers to provide 62 filtering surfaces. Either the felt glove or the entire filter can be replaced in a few minutes.

Wing Flap Drive Unit

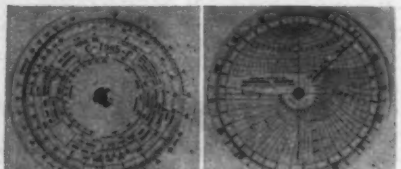
A new wing flap drive unit designed specifically for wing flap actuation on the Douglas A-26 attack bomber has been engineered



by Electrical Engineering & Mfg. Corp., 4606 West Jefferson Blvd., Los Angeles 16, Cal. It is of intermittent type, 2 hp, 7,500 rpm, with magnetic clutch and brake. It is designed for low impact torque to prevent damage in the event of overtravel due to failure of electrical stops. Literature on this and other motors is available on written request.

American Airlines Computer

A pocket navigational computer designed by American Airlines for use of its own pilots is now being made generally available through Goble Aircraft Specialties, Inc., 135-06 Northern Blvd., Flushing, N. Y. The



device is made of Vinylite, light in weight, small in size and easily read. Print is covered with clear plastic and will not wear off. Both the standard Dalton scale and the Navy approved Jensen method are incorporated, and the computer may be used to solve almost any navigational problem, including calibrated airspeed, ground speed, distance, altitude, gasoline consumption, climb, wind angle, wind correction angle, true airspeed, and heading as well as miscellaneous calculations.

Wheelabrator Swing Table

A new airless blast cleaning machine, the Wheelabrator Swing Table, now is available in four sizes from the American Foundry Equipment Co., Mishawaka, Ind. Work to be cleaned is placed upon a rubber covered work table mounted on the door of the blast cabinet. As the door is closed, the work table swings into the cabinet underneath a Wheelabrator airless blast unit, in which position it is rotated at a predetermined speed. The different sizes vary from a 24-inch to an 88-inch work table, and in the number of blast units utilized.

Bendix Single Crystal Transmitter

A compact, eight channel, mobile service transmitter which can be set for any frequency in the 100-156 megacycle band and

uses but one crystal has been developed by Bendix Radio Division, Bendix Aviation Corp., Baltimore. The new unit incorporates a new three-dial, eight channel automatic shifter which has many possibilities in multi-channel applications. It can be quickly converted from amplitude to frequency modulation.

Pressure Sealing Zipper

A pressure sealing zipper has been developed by the B. F. Goodrich Co., Akron, and is now being used on bomber turret curtains to seal against the entrance of air, rain, snow or sleet. It has a unique rubber construction of overlapping lips with such initial pressures built into them that they insure a seal against any pressure which the structural strength of the slide fastener to which they are applied will withstand. Temperature range is from —70 to 150 degrees Fahrenheit. Other proposed uses include application on high and low pressure ducts, doorways and handholes, and as aileron seals.

New Insulated Cowl Mountings

New radial engine aircraft cowl mountings made from synthetic rubber which have a high rate of vibration and shock absorption, and are impervious to oil, have been added to the line of insulated bushings and mountings manufactured by Bushings, Inc., 3442 West Eleven Mile Road, Berkley, Mich. The metal inner and outer shells are assembled to the synthetic without vulcanising, and as a result heat does not affect the mounting until temperatures beyond safe operation have been passed.

Complaint Dismissed

The complaint of Cordova Air Service has been dismissed at the request of Cordova. The complaint charged that Alaska Airlines had stalled in the settlement of a proposed acquisition, which the CAB disapproved June 27, and that as a result Alaska Airlines was in violation of the Civil Aeronautics Act.

Two-way Personal Aircraft Radio

An 18-pound, low-cost, 12-watt, two-way radio for personal and light planes has been developed by the General Electric Co., Schenectady, N. Y. It is equipped with an instrument panel plug-in package feature. The new unit was unveiled recently at the Airport Development Clinic sponsored by the New York Board of Trade.

WHITE KNOWS TRANSPORTATION *FROM THE GROUND UP*

Typical White transport unit in the fleet of H. E. Swezey & Son, Eastport, L. I., delivering its cargo to an American Airlines Airfreighter at LaGuardia Field, N. Y., for Los Angeles, where another White will pick up and deliver the goods direct to consignees.

Store-Door Delivery *for Dependable Air Cargo*

MOTOR TRUCKS . . . the store-door delivery tool of *all* forms of long distance transportation . . . are necessary to America's newest facility—air cargo.

The time element is important in all air shipments. That makes it necessary to judge all air transport service by elapsed time from shipper-to-receiver, rather than from port-to-port. That is why dependable motor trucks are so important in this service.

White Trucks have had experience furnishing the ground link for air transport since the inauguration of air mail. If you have ground transportation problems in connection with your air cargo plans, you can get authoritative information from White. Your inquiry will receive the attention of men who are interested in aviation's future and who know transportation from the ground up.

★ White

THE WHITE MOTOR COMPANY • Cleveland

A larger volume of new Super Power Whites for commercial use is now assured by government order. Your White representative will be glad to help you make application.

FOR MORE THAN 45 YEARS THE GREATEST NAME IN TRUCKS

Former AAF Training Contractor Expanding Facilities for Postwar

MANY former Army Air Forces Contract Primary Schools are applying for feeder lines, and expanding service facilities and sales organizations in preparation for the postwar, the Aeronautical Training Society reports. Most of the operators are suffering severe shortages of manpower and are curtailed in their conduct of training activities by gasoline and flying restrictions.

Work in progress and planned activities of former operators and current operators of Army pilot training installations in the Eastern states as reported to ATS include:

Anderson Air Activities, with headquarters at General Mitchell Field, Milwaukee, Wis. has opened sales and service bases at Fond du Lac, Wis., and Lake Lawn at Delavan, Wis. The Lake Lawn operation is a seadrome, appealing especially to resorters. Flight training, including Link instrument instruction, is part of Anderson service. Head of the concern is E. Merritt (Andy) Anderson. He ran an AAF primary pilot school at McBride, Mo.

Akron Airways, Inc., is expanding flight training, maintenance and overhaul facilities in the mid-West. R. A. Van Devere is head of the concern. He was managing partner of an Army school at West Helena, Ark. With William R. Kent of Memphis, he has applied for feeder airline routes in the mid-south states. Southair, Inc., is the applicant company.

Embry-Riddle Co., headed by John G. McKay of Miami, is continuing flight training for American and British cadets at Arcadia and Clewiston, Fla., and redoing its facilities for overhaul of engines, airplanes, and instruments in anticipation of civilian business. Its overhaul and service bases are in Miami. Flight instruction and technical training for civilians figure heavily in postwar plans.

Graham Aviation is spreading service bases in Pennsylvania, with operations at Pittsburgh County Airport, where it is constructing private flying installations costing $100,000; Fort Meadville at Meadville, Splane Memorial Field, Oil City, and Parker-Cramer Field, Clarion. William J. Graham, president, is putting his war training experience, gained at an AAF contract school at Americus, Ga., to use in establishment of an air college at Pittsburgh. This is being done in conjunction with A. G. Becker, president of Pittsburgh Institute of Aeronautics. Graham and Becker have merged some of their resources to enlarge the activities of the Institute, which developed as a mechanics school.

Hawthorne Flying Service, Inc., headed by Beverly E. Howard, is steadily spreading bases in the Carolinas. There are now Hawthorne operations at Columbia and Orangeburg, S. C.; Rocky Mount, Greensboro-High Point and Fayetteville, N. C. Hawthorne Airways is an applicant organization for mail pickup routes in Virginia and the Carolinas. Air Services, Inc., charter and sight-seeing service at Washington National Airport, is another Howard organization, now inactive but awaiting peacetime expansion. Howard is still engaged in full-scale flight training at Orangeburg, S. C., where the Hawthorne School of Aeronautics gives primary instruction to French aviation students. This school formerly taught AAF Aviation Cadets.

Hylan Flying Service, Inc., is developing an ideal private flyers' airpark at Hylan Field, Rochester, N. Y. Ray Hylan heads the organization, also operates at Rochester Municipal airport. Hylan Airways, Inc., proposes feeder airline operations in New York and other eastern states. Hylan formerly was partner with James P. Wilmot in Lafayette School of Aeronautics, AAF primary pilot school at Lafayette, La.

Page Airways, Inc., service and civilian flight school in new facilities at Rochester, N. Y., municipal airport, is headed by James P. Wilmot, who formerly was partner in Lafayette School of Aeronautics.

Parks Air College, East St. Louis, Ill., is parent organization of Parks Aircraft Sales and Service, Parks Air Transport, Inc., and Alabama Institute of Aeronautics. All are under direction of Oliver L. Parks. Parks operated five primary training bases for the AAF, at East St. Louis, Ill.; Sikeston, Mo.; Cape Girardeau, Mo.; Jackson, Miss.; and Tuscaloosa, Ala. Parks Air College has been enlarged for more technical students. At Tuscaloosa, Alabama Institute of Aeronautics is set up for private and commercial flight courses for women. The airline system is planned to cover most of the middle west and mid-south states. The sales and service organization covers six middle west states and Alabama and Mississippi. It is emphasizing sales of Ercoupe.

Southeastern Air Service, Inc., has its principal bases in Georgia, at Atlanta, Athens, and Macon. A flight school is operated in conjunction with the University of Georgia at Athens. The company's major overhaul base is there. A number of associate bases are being opened by Southeastern in the Carolinas and Georgia. These associate bases are indivdual proprietorships with sales, service, and maintenance coordinated with Southeastern. Headquarters of the company are in Atlanta. Cody Laird is president. The company formerly ran AAF primary pilot schools at Bennettsville, S. C., and Jackson, Tenn. It is affiliated with Southeastern Air Express, Inc., in a feeder airline application.

Southern Air Services, headed by William R. Kent, of Memphis, Tenn., is arranging for a chain of bases in a 250-mile radius of Memphis, Southair, Inc., is a feeder airline applicant company headed by Kent in partnership with R. A. Van Devere of Akron. Southern Air Services was parent company of AAF primary schools at Pine Bluff, Ark., and Clarksdale, Miss., and in partnership with Van Devere operated a school at West Helena, Ark. Southair, Inc., plans a mid-south airline network.

Southern Airways, Inc. has commercial bases in Birmingham, Ala.; Atlanta, Ga.; Huntsville, Ala.; Greenville, S. C.; Camden, S. C.; and Charlotte, N. C. Frank W. Hulse of Birmingham is president. The company operated AAF primary bases at Camden, S. C., and Decatur, Ala. The Decatur base is now converted to a storage and maintenance base for trainer planes and is being operated by Southern under contract with the Army. Southern Airways has an application for a feeder airline netting the southeastern states.

Southeastern Air Express, Inc., feeder airline applicant, is headed by Wesley N. Raymond of Orlando, Fla., formerly operator of an AAF school at Douglas, Ga. This concern plans a southeastern air network. Affiliated in the company are Southeastern Air Service, Inc., and Columbus Airways, Inc., of Columbus, Ga. Raymond is opening air service bases in Florida, with headquarters of Raymond Aircraft Company at Orlando and airport operations at Ryan Field, Apopka.

Abrams 'Explorer' Family Plane

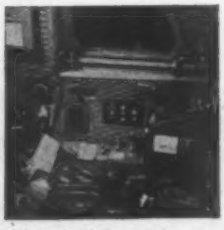
The Abrams Explorer, originally developed in 1937 for aerial survey work, is now being adapted as a five place family plane, and will be placed in production as soon as the war is over, according to the latest catalog of the Abrams Instrument Co. The original Explorer is a midwing, pusher monoplane of twin-boom design with retractable tricycle landing gear. It has an all plexiglas nose to provide maximum visibility, and is said to have a quick climb and high speed at altitude.

78 Planes Sold in Department Store—In a new aircraft merchandising plan an Ercoupe was displayed in Mandel's department store in Chicago. Thousands saw it and 78 bought. Parks Aircraft Sales and Service Companies also are putting on such displays in Indianapolis, St. Louis and Kansas City.

FIBERGLAS* *Insulation* Type XM-PF for Aircraft

Helped the "Commando" weigh in lighter

The installation of Fiberglas Aircraft Insulation, instead of material formerly used, let the Curtiss C-46 Commando weigh in 200 pounds lighter.



View of pilot's compartment showing the inch-thick Fiberglas Insulation with diamond-quilted trim cloth.

Fiberglas Insulation, Type XM-PF is a lightweight, incombustible material. It is made of fine fibers of glass, bonded into a flexible blanket form. It has an exceptionally low moisture pick-up, even under conditions of extreme humidity. Fiberglas XM-PF weighs as little as one pound per cubic foot, yet provides an optimum of insulating effect.

It is easy to handle and install. And it requires no stitching or fitting to maintain its form and shape, even under extreme vibration. Fiberglas XM-PF Insulation serves a dual purpose in aircraft construction, providing a highly efficient acoustical and thermal insulation.

Helps the Airlines increase pay loads and comfort

Transports, released by the army for commercial service, are also being given the advantages of Fiberglas XM-PF, where weight reduction means bigger pay loads and customer comfort pays dividends.

Army transport being converted for civilian service by Douglas Aircraft Company, Inc.

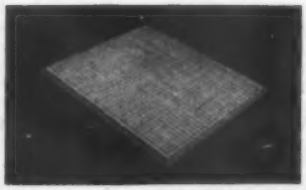
Fiberglas, in other forms, is being used by the military and commercial aircraft industry for both new construction and reconversion work. A few of the types and uses are listed below.

If you do not have complete data on Fiberglas in all of its various forms, or if you have a problem which Fiberglas may help solve, write: *Owens-Corning Fiberglas Corporation, 1894 Nicholas Building, Toledo 1, Ohio. In Canada, Fiberglas Canada Ltd., Oshawa, Ontario.*

Buy War Bonds!

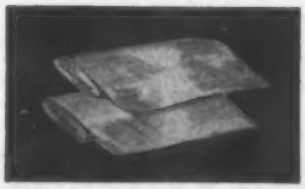
FIBERGLAS

*T. M. Reg. U. S. Pat. Off.



AIRCRAFT REINFORCED PLASTICS PARTS—fabricators are combining certain low-pressure resins with Fiberglas fabrics. Lightweight, impact strength, sound dampening. Used for panels and formed parts.

AIRCRAFT TAPES—another all-glass product, woven from Fiberglas yarns. Incombustible. Used for insulating motors, generators, etc., and for lagging of thermal insulation on ducts and pipes.



AIRCRAFT COATED FABRICS—Fiberglas cloth used as a base for rubber, vinyl compounds and other coatings. Dimensional stability, high strength, humidity resistance. Used in flexible connections, etc.

Removable Wings and Tricycle Gear Featured on Sport Plane

THE YOUNG SWEDISH aircraft industry, which has been concentrating its efforts on military planes, has announced that it will soon be flying a prototype sport plane designated the SAAB-91.

The new ship will be of all-metal construction with a tricycle landing gear, and will embody many adaptations from the industry's military experience. While the principal material used will be aluminum alloy, steel plate will be used to cover the belly. The primary aim of the designers has been a safe and stable plane which can make rough landings—even emergency landings in the open country—with a maximum of safety for pilot and passengers.

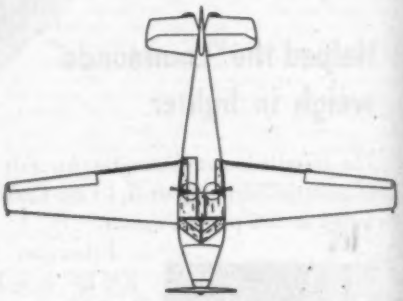
Originally designed as a side-by-side two seater, the plane now is being planned as a three-seater with the third seat placed just behind the right front seat, making it possible to convert the two passenger seats into a bed for such purposes as transporting ill persons to hospitals. The switch-over from two seat to three seat design came about when it was discovered that the adoption of all-metal construction would result in a lighter aircraft than the wood and metal construction originally planned. A two seat version with an extra large baggage compartment also is planned.

The SAAB-91 will have a basic weight empty of 1210-1270 lbs. and a design gross weight of 1980 lbs. It is estimated to have a range of 625 miles and a cruising speed of 125 mph. The prototype will be powered with a 130hp Gypsy Major engine. An unusual feature of the plane will be removable wings that can be taken off or put on by three men in 10 to 15 minutes.

No price has yet been set for the SAAB-91, but it is estimated that it may run as high as $7000 at the beginning, and later be reduced to about $6000 when it gets into mass production. This high price is principally due to the all-metal construction.

A second single seater sport plane has been designed independently by three Swedish engineers. Designated the BHT-1 after the names of its designers—Bratt, Hilfing and Törnblom, was first flown on Dec. 4, 1944. Also known as the "Beauty," it is of wood, fabric and metal construction, and is said to have extremely nice lines. The landing gear retracts backwards into the wing.

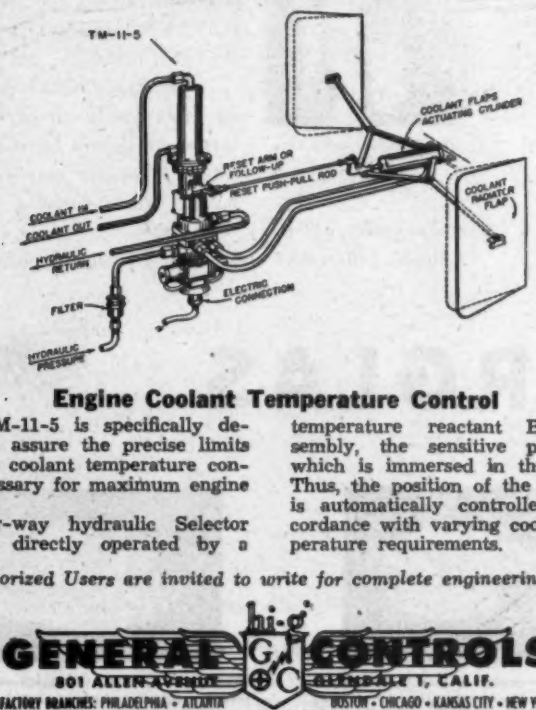
Fitted with a 60 hp Walter Mikron engine, the BHT-1 has an 18.06 ft. per second rate of climb, but with the more powerful 105 hp Hirth engine its rate of climb is 29.53 ft. per second. With the bigger engine, it is said to be suitable for advanced training. Diving speed is given at 360 miles per hour.



Swedish Sportplanes— The SAAB-91, top, is a new Swedish low-wing sportplane with a retractable tricycle landing gear and engine of from 100 to 150 hp. Cruising speed is given as 125 mph. The drawings of the plane, center, show the low undercarriage placed well back. The broad cross section of the fuselage is similar to that of the German Bucker Bestmann. The span is 35 ft. 4 in.; length, 26 ft.; height, 7 ft. 4 in.; and wing area, 146.39 sq. ft. The BHT-1, bottom, already is in mass production.

GENERAL CONTROLS

TM - 11 - 5



Engine Coolant Temperature Control

The TM-11-5 is specifically designed to assure the precise limits of engine coolant temperature control, necessary for maximum engine efficiency.

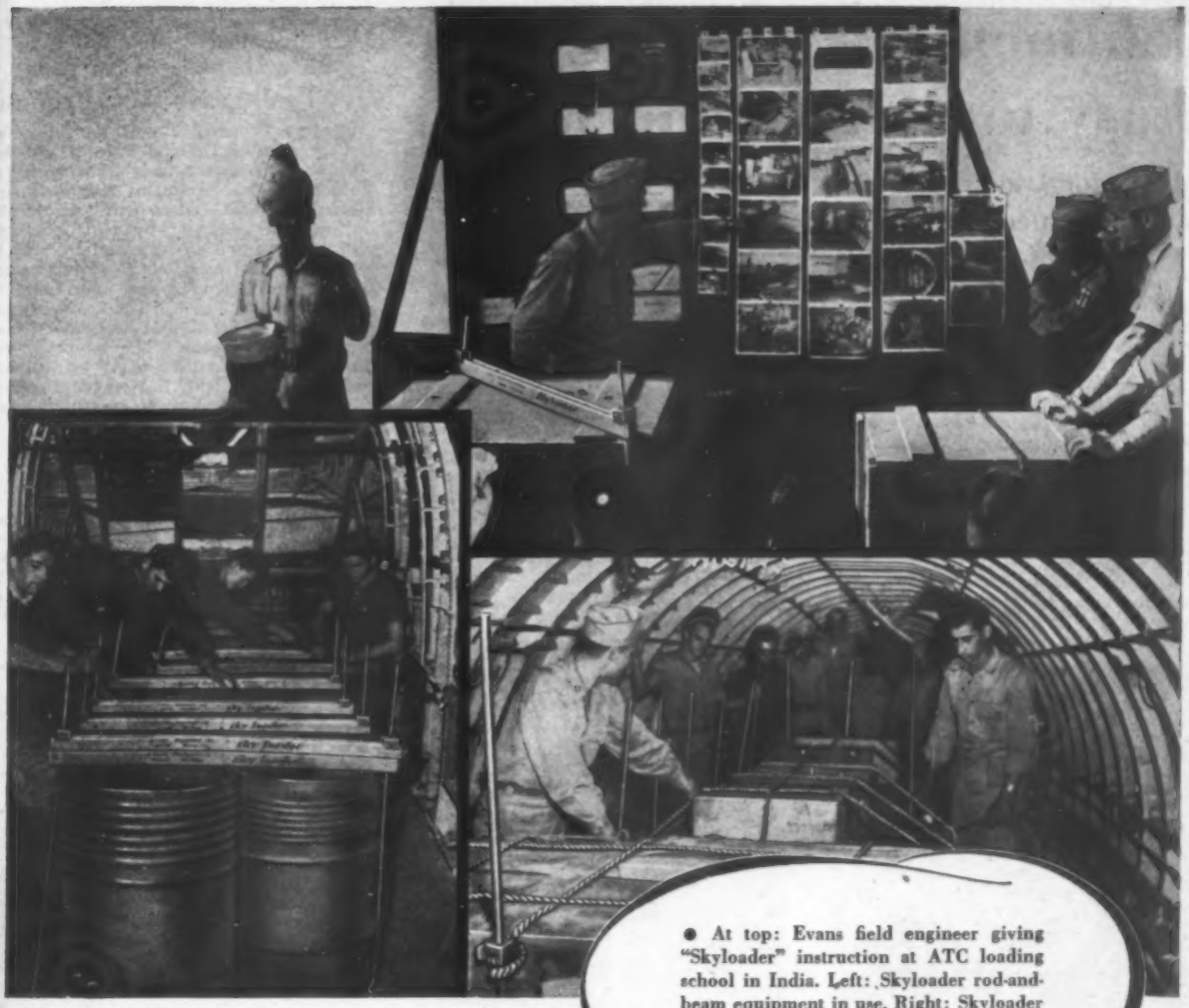
A four-way hydraulic Selector Valve is directly operated by a temperature reactant Bulb Assembly, the sensitive portion of which is immersed in the coolant. Thus, the position of the exit flaps is automatically controlled in accordance with varying coolant temperature requirements.

Authorized Users are invited to write for complete engineering data.

hi-g GENERAL CONTROLS
801 ALLEN AVENUE GLENDALE 1, CALIF.
FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • KANSAS CITY • NEW YORK
DALLAS • DENVER • DETROIT • CLEVELAND • HOUSTON • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES

Alaskan Service Base Opened

A complete aircraft service station approved by the Civil Aeronautics Administration for all classes of work for which certification is granted and furnishing overhaul, maintenance and general service on planes, engines, propellers, accessories, instruments and radios has been opened at Merrill Field, Anchorage, Alaska, by Pacific Airmotive Division of Airplane Manufacturing & Supply Corp. D. J. Shoemaker, formerly manager of the company's Oakland, Cal., branch, is manager of the new station, and Tom Appleton is superintendent of shop and production activities.



OFFICIAL U. S. A. A. F. PHOTOGRAPHS, INDIA-CHINA DIVISION, AIR TRANSPORT COMMAND

● At top: Evans field engineer giving "Skyloader" instruction at ATC loading school in India. Left: Skyloader rod-and-beam equipment in use. Right: Skyloader rope-and-hook equipment.

ATC loading crews make transport flying safer

The best pilot cannot fly an improperly loaded plane. And when the loading crews of the Army Air Forces Air Transport Command attend schools in all parts of the world to learn, as part of the course, the uses of Evans Skyloader equipment, they are taking a long step forward insuring certain arrival of crew and cargo.

Evans Skyloader equipment offers a simple, practical, positive system of tie-down of all types of cargo. Freight actually becomes part of the airplane. Both rod-and-beam equipment and rope-and-hook equipment, as illustrated, save loading time and enable planes to carry cargoes safely, undamaged and, regardless of size, without risk to the plane. Anything from a crate of eggs to a howitzer will ride safely with Skyloader tie-down.

And all Skyloader equipment is so simple in operation that its application is quickly learned even by inexperienced natives in the countries where ATC operates.

Pioneers in the development of loading equipment for both land and air transportation, Evans engineers are planning now for the wider development and use of Skyloader equipment after the war. For many ATC men who depend on Skyloader today will become the airmen of peace who will depend on Skyloader tomorrow.

SKY PRODUCTS DIVISION

EVANS PRODUCTS COMPANY

DETROIT 27, MICHIGAN

Continental's I-1430 Engine Easy to Service and Repair

Built for Use With Turbo-Supercharger; Can Develop 2,100 hp

A NEW high-horsepower, in-line, liquid-cooled engine of unusual design has been in limited production at Continental Aviation & Engineering Corp., a subsidiary of Continental Motors, which has previously been associated only with light and medium horsepower air-cooled types.

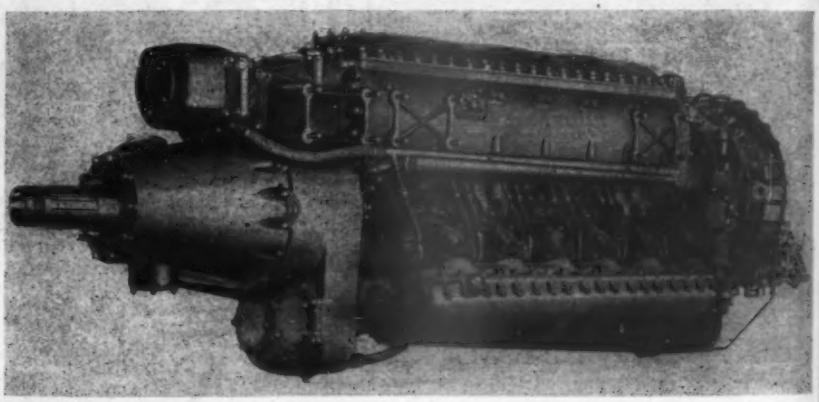
Known as the I-1430, the new power plant is a 12-cylinder 60-degree inverted V type developing 2,100 horsepower at 3,400 rpm. It weighs .69 lb per hp, and develops .68 hp per cu in, piston displacement being only 1,425 cu in, or but slightly more than half that of air-cooled engines of comparable power. The horsepower to weight ratio is one af the highest for any engine yet announced.

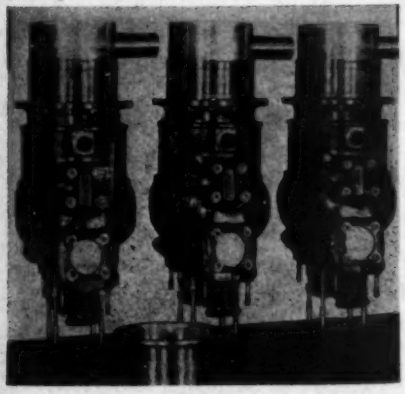
One of the most unusual features of the new engine, and a major reason for its high output, is individual cylinder construction. Besides avoiding some disadvantages inherent in other designs, having to do with stresses and strains at maximum load, this departure makes possible certain refinements in the barrel and jacket which result in better cooling characteristics. Likewise, it greatly facilitates service and repair, long a major problem with engines of this type.

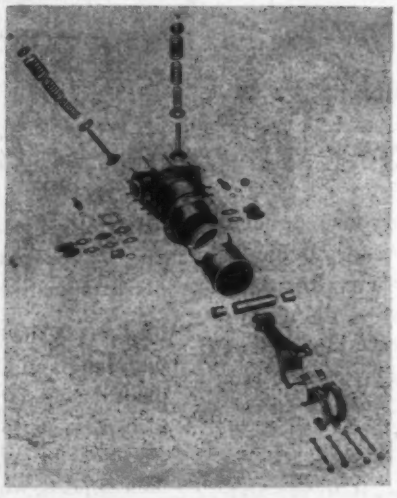
In another departure from conventional design practice for engines of this general type, the individual cylinders are constructed with two valves each instead of the customary four.

The I-1430 is built for use with turbo-supercharger. Valve timing and other factors are such that it can use high back-pressure to obtain not only sea-level power output at high altitudes, but useful ground-boost as well. For dual installation it can be made to run in either direction with the change of a single part.

Continental Motors engineers had been at work on the high horsepower project for some ten years prior to organization of the subsidiary company in 1940, A. W. Wild, executive vice-president of Continental Aviation & Engineering revealed.







Continental Skypower— Latest addition to the high horsepower aircraft engine field is this liquid-cooled, 12-cylinder, 60-degree inverted V type 2,100 hp power plant which has been in limited production at Continental Aviation & Engineering Corp. Top left and right, are front and side views of the new power plant. Lower left, shows how the cylinders are constructed individually, a radical departure from conventional practice in engines of this type. Lower right, is an exploded view of an individual cylinder. Only two valves per cylinder are used instead of the customary four. The new engine is known as the I-1430.

In 1940 the work was stepped up considerably by the new subsidiary, and the model now in production embodies many refinements, resulting not only in higher output, but in greater compactness and reduced weight. The most recent model developed 2,100 hp, war emergency rating, in tests held under Army Air Forces supervision last summer.

The Continental I-1430 has been used to power experimental planes.

Original Manufacturers May Dispose of Surplus Tools, Says DPC Proposal

Surplus Property Board has approved the proposal of Defense Plant Corp. that surplus government tools be disposed of through original producing manufacturers. Under the DPC agreement, all surplus cutting tools produced by a manufacturer will be returned to him and he will be reimbursed for cost of handling, reconditioning and storing and paid a selling commission of 17½%. The manufacturer must agree to fill 25% of his demand from government surplus. The contract may be canceled by either party on 10 days written notice. DPC has on hand a large stock of these tools in varying types, sizes and makes.

Breeze Officers Re-elected

Officers and directors of Breeze Corporations Inc., were unanimously re-elected at the annual stockholder's meeting. Eighty per cent of the total outstanding stock was represented. The board of directors re-elected John T. Mascuch, president; Joseph F. Lucas, vice president, and Fred G. Shupp, treasurer. David T. Wilentz retained chairmanship of the board. The board is composed of these four and Frank C. Mindnich, president of Federal Trust Co., Newark; Clarence K. Pistell, a director of Harvill Corp., and Robert B. Reynolds, president of Federal Laboratories Inc., Pittsburgh. Herbert J. Dwyer was re-elected secretary.

How Rutland Profits with Bowser EXACT Liquid Control

When a single type of equipment serves a manufacturer in many different ways, that's a definite plus.

Take, for instance, the Bowser Meters in the plant of the Rutland Fire Clay Company, Rutland, Vermont, nationally known makers of heat resisting specialties. First, Bowser Meters measure incoming solvent—an obviously important check-up. Then, they measure—right down to the exact spoonful—the liquids going into Rutland products.

And in both operations, Bowser Meters paid off handsomely in these ways:

Uniformity of Product—Human error is eliminated.

Money-saving—A Bowser Meter on the intake line stopped discrepancies and resulting losses.

Time and Labor Saving—An operator sets the Bowser Predetermining Meter for the amount needed for a mix . . . then goes about other work. Time and labor is saved! Production steps up!

The time, labor and money-saving benefits of Bowser equipment is a familiar story in the field of Airport Fueling. Here's why:

Complete Range of Equipment—above and underground systems; marine, mobile, portable and centralized types; standard or special installations.

Accurate Measurement—Bowser Xacto Meter measures and records every drop.

Clean, Dry, Safe Fuel—impurities and free moisture removed as fuel is dispensed.

Serv-A-Plane—for medium and smaller planes and airports; compact, easily installed; a complete, self-contained service station. AVIATION DIVISION, BOWSER, INC., Dept. 32-D, Fort Wayne 2, Indiana.

BOWSER

SINCE 1885

THE NAME THAT MEANS EXACT CONTROL OF LIQUIDS

Not only has Bowser's war production earned the Army-Navy E . . . Bowser equipment has helped earn it for scores of other companies.

Solar Engineer Says:

Comfort Features of Aircraft Should Go Into First Designs

FAILURE to consider the installation of comfort accessories in a plane while the airframe is still in the design stage will result not only in unsatisfactory weights and performance, but may also affect the operation of other accessories, if not the plane itself, Albert A. Arnhym, consulting engineer, Solar Aircraft Co., points out in a paper prepared for the 13th annual meeting of the Institute of the Aeronautical Sciences.

Among the equipment items falling under the general heading of comfort accessories the Solar engineer includes air supply, heat supply, anti-icing installations, soundproofing, seating and berthing, lighting, lavatories, galley and interior styling, each of which he says must be considered in relation to the basic design of the plane itself if the intended result is to be provided efficiently and economically.

In the matter of air supply, for example, he points out that a suitable ducting system consisting of a scoop in a positive pressure area, one or more main ducts with a variety of branches, and a spilling system in a negative pressure area is required. Such a complex installation cannot be stored into a fuselage unless the designer of the latter has provided space for it.

Ceiling, Wall, or Floor?

To be of real assistance to the ventilating engineer, the airframe designer must help decide at the outset whether the contemplated ducting system should be of the overhead, sidewall or floor type. Then, once the method has been agreed upon, the fuselage must be so designed as to accommodate the ducting without interfering with chairs or berths, cabin arrangements or styling, and with a minimum of elbows and bends which would produce unreasonable back pressures.

Other problems which must be considered in this connection and compromised to the satisfaction of all concerned include placement and size of the scoops and spill arrangements, size of ducts, heating provisions and cabin arrangements as they affect the location of air inlets and outlets. This latter consideration is particularly important in the case of convertible arrangements, permitting the insertion or removal of partitions as needed, and in sleepers where a space is open from floor to ceiling during the day, but divided into three separate spaces by berths at night.

Turning to heating, Arnhym says that while it would be impractical to make a radical change in design to cut down heat loss through the fuselage and save a few pounds in heater weight or a couple of yards of heatproofing material, there are a few concessions that can usually be made without difficulty. These include any possible reductions in skin area, and designing of the fuselage so as to make possible incorporation of radiant heat schemes in which warm air is circulated between the skin and soundproofing fabric in such a manner as to keep the temperature of the wall slightly above normal body temperature.

Windows are a major obstacle to both heating and soundproofing, but are essential to provide light and visibility. A satisfactory compromise is achieved by resorting to a double pane construction in which one pane from plate glass and another one from plastic material are separated by a small airspace through which war air is circulated.

Directly related to the heating problem is that of anti-icing which assuming great importance at the present time. The full effectiveness of thermal anti-icing, according to the Solar engineer, can be achieved only by designing the wing so as to make it particularly suited for the purpose. The leading edge should be formed by the main feeder duct and provisions made to conduct heat to the top and bottom of the wing clear up to the trailing edge. Construction of the inside of the wing should permit circulation of warm air through the entire chord and spilling of the air near the trailing edge so as to be aerodynamically helpful.

Soundproofing is the next most important comfort item, and consists first of reducing existing noises to a minimum at their sources, and second, of reducing still existing noise levels by the installation of sound-proofing materials. The primary stage depends almost entirely on the designer, and he can aid materially by such considerations as making sure there is at least 12-14 inches between the propeller and the fuselage, locating the passenger cabin so that no part of it is within three feet forward or aft of the propeller plane, providing a collector ring and tail pipe system for the exhaust, and locating the tailpipe on the outboard side of the nacelle so that it will act as a baffle and prevent emitted gases from striking the fuselage and setting it into vibration.

Few Stressed Members

Fuselage design features which cut down on noise levels include the use of as few stressed members in the passenger cabin as possible. Flooring attached to horizontal stringers with proper damping is preferable to a stressed floor. Large bulkheads or similar flat surfaces should be broken up or given a curvature, or where neither is possible, stiffeners will achieve a similar result. Suspensions, locks and mounts for accessories are other factors to be considered.

This does not mean that the entire design of the airframe must be subject to the consent of the soundproofing engineer, but rather that consultation with him may result in certain changes which, aerodynamically and otherwise, are insignificant, but may save many valuable pounds for the sound- and heatproofing installation.

Turning to berthing and seating, Arnhym points out that fuselage design must take into account not only the placing of a given number of chairs, but also their location so as to give good visibility, sufficient leg room, adequate ventilation and other factors conducive to comfort. In the case of a convertible sleeper, the decision of how to convert seats into berths and vice versa should not be determined by the design of the fuselage, but be made in consultation with all parties concerned. The possibility that it will be profitable to use the same airplane for a number of purposes is now being considered by airframe manufacturers who are providing a fuselage design which can be converted into a number of easily arranged combinations.

Lighting considerations get not only into the problem of how many and how big windows, but even has an important bearing on the eternal controversy between high and low-wing airplanes. In general, windows should be located so as to provide optimum visibility, not only to increase passenger enjoyment, but because as long as the passenger is occupied, he is less apt to feel other discomforts, and is less susceptible to air sickness. Illumination at night can also be enhanced by proper fuselage design, although most of this burden rests on the stylist and illumination engineer.

Pre-designed Lavatories

Lavatories, because of the very small space allotted to them, should have their layout established and be placed in the fuselage before the final arrangement has been decided upon. In this way it may become apparent that a minor change in the fuselage structure can save both discomfort and weight.

This applies also to the galley. Here improper placement may lead to cases where galley odors seep into the cabin, adding to the susceptibility of some passengers to air sickness. And in one case, for example, a garbage shoot was so located that, during certain flight evolutions, the garbage would be blown into the cabin.

While styling the cabin is primarily the job of the stylist, even here the designer can be of help. The stylist achieves his results by clever use of lines and colors. It is more difficult and costly to style a cabin which is inherently ugly than one whose slender lines and functional design provide the foundation which the artist needs. The same applies to shaping the fuselage to provide ease of motion. While it cannot always be shaped the way the stylist or chair designer would like it best, once their wishes are known, it should be possible to meet them halfway, even if both sides have to make concessions.

In conclusion Arnhym states that his paper is merely intended to emphasize the extent to which comfort can and should govern airframe design. There is no justification, he says, in going to extremes because, if mutual problems are discussed before the final decisions have been reached, a compromise can be evolved which will show surprisingly little change in the original concept of the airframe and yet permit its comfortization at less weight and greater efficiency, thus making the final product a better and all around more profitable airplane.

Leaves Miami Port Authority

Col. B. C. Allin, Berkeley, Calif., for the past six months director of the Greater Miami Port Authority at $12,000 per year, has tendered his resignation. Col. Allin gave as his reason for resigning a desire to enter the airport planning field. He is joining the firm of Airways Engineering Consultants, Inc., 1621 Connecticut Avenue N. W., Washington, D. C. Upon his return to California he will become vice president in charge of the Pacific Coast area and make his headquarters in Berkeley.

"Airlines Will Be Able to Carry 80% of All Long Distance First Class Passenger Traffic"

W. C. MENTZER, *Chief Engineer, United Air Lines*

"With larger, faster planes in the 'Age of Flight', the airlines should be able to carry 80 per cent of all long distance first class passenger traffic," says W. C. Mentzer. "But they will have to reduce fares substantially in order to penetrate new, broader markets. That means that we must strive for longer plane life and lower maintenance costs. We, at United, are proud of our high maintenance standards. We aim to keep them high. But we are also engaged in continuous study of ways and means of reducing maintenance costs. Our post-war DC-4's and DC-6's will come equipped for long, safe service."

BOOTS REDUCE AIRCRAFT MAINTENANCE

- "Outlast the plane."
- Can be used again and again—yet self-locking grip never slips.
- Unaffected by heat, cold, gasoline, oil, water, chemicals.
- Lighter, tougher, Boots step-up cargo capacity.
- Standard fastenings on wartime fighters, bombers, transports, and on post-war commercial planes.
- Meet all specifications of government agencies.

Motion Picture—"All Work And No Play"—16 mm. sound—30 minutes. Write for information. Dept. G.

BOOTS STEEL ANCHOR NUT

(W2S #8-32)—The comparable fibre-type nut is more than 2½ times as heavy as this Boots all-metal nut.

Send for Free Weight-Saving Booklet

Actual weights of over 250 different self-locking nuts used in aircraft, comprehensively reviewed for the convenience of aircraft designers, engineers, operating and maintenance personnel. Copy will be sent you, free, on request.

BOOTS SELF-LOCKING NUTS

"They Fly With Their Boots On—Lighter"

Boots Aircraft Nut Corporation, General Offices, New Canaan, Conn.

Representatives in New York • Chicago • Detroit • Los Angeles • Toronto • Montreal • Vancouver

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Vaughan

Marshall

Mansfield

George S. Hunt, who designed the interiors for the DC-3 and DST, left Douglas Aircraft Co. April 1 to join Henry Dreyfus, New York industrial designer. He had been with Douglas for 11 years.

Harold Mansfield, public relations manager of Boeing Aircraft Co., has been elected chairman of the public relations committee for the Aeronautical Chamber of Commerce, Western region, and for the West Coast division of the Aircraft War Production Council. He succeeds **John E. Canaday,** public relations manager for Lockheed Aircraft Corp.

Charles L. Beard, vice president and secretary of Bell Aircraft Corp., and with the company since its incorporation, has been named, vice president, treasurer and a director. **Lester P. Faneuf** has been appointed secretary and chief of the corporate staff, and **Harvey Gaylord** has been appointed assistant treasurer.

John M. Martin, recently assistant to the general manager of the Kenmore plant, has been appointed manager of division sub-contracting for Curtiss-Wright Corp., Airplane Division. **L. W. Botts** succeeds him in an acting capacity.

Guy W. Vaughan recently celebrated his 10th anniversary as president of the Curtiss-Wright Corp. Before being elevated to the presidency of the parent company he was president of Wright Aeronautical Corp.

Roy Browning has been named production engineer for the C-82 project at Globe Aircraft Corp. **Gene Murray** was appointed assistant production engineer, and **Doyle Murray** liaison representative with Fairchild at Hagerstown.

John Dial has been named liaison representative for North American Aviation, Inc., at Globe Aircraft Corp. on the C-82 project.

C. S. Gischel, with Firestone Tire & Rubber Co. for 10 years, has been appointed manager of that company's newly created aircraft tire and accessory sales department, and will direct a complete program for merchandising aircraft products to private fliers.

A. R. Marshall, previously with the Nashville division of Consolidated Vultee Aircraft Corp., has been appointed chief of the industrial relations department of Convair's Stinson, Wayne, Mich., division, succeeding **R. G. McGuire,** resigned.

John F. Wallace, chief executive engineer of the aircraft and automotive engineering department, and **E. W. Cleveland,** special sales representative, have been named directors of the Cleveland Pneumatic Tool Co.

Claire L. Barnes, founder and for many years president of Houdaille-Hershey Corp., has been elected chairmen of the board of Bendix Helicopter, Inc., to fill the vacancy created by the recent death of **Vincent Bendix. Robert J. Newhouse,** of Newhouse & Sayre, was elected chairman of the executive committee, and **Frederick K. Barbour,** a director, has been appointed to the executive committee.

Melvin H. Hass, in the Marine Corps for three years before joining the company, has been appointed administrative assistant to the president of Adel Precision Products Corp.

William G. Fuller, factory manager at Globe Aircraft Corp. since joining the company in 1942, has been named assistant vice-president, and will devote his entire time to administrative affairs.

E. E. Elliott, recently chief test pilot for McDonnell Aircraft Corp., has joined the Fairchild Aircraft Division as a flight service engineer. In this capacity he will serve as a company representative at Army bases where the C-82 Packet is in operation.

B. A. "Bud" Gillies, formerly vice president of Grumman Aircraft Engineering Corp., has been elected a vice president of Ryan Aeronautical Co., succeeding **O. L. Woodson,** resigned.

Arthur A. Pieper, who joined Republic Aviation Corp. a year ago as assistant to the president in charge of accounting and auditing has been advanced to financial vice president.

Frank P. Herman, formerly vice president in charge of equipment sales, has been named executive vice president of Purolator Products, Inc., Newark, N. J. He has been with the company for 19 years.

Raymond P. Lansing, a vice president of Bendix Aviation Corp., and group executive in charge of its Eclipse-Pioneer, Philadelphia and Scintilla divisions, has been elected to the board of directors, succeeding **G. A. Rentschler,** resigned.

Herbert E. Williams, Jr., previously a field representative in England, has been named chief of the field engineering staff of the .Aero division of Minneapolis-Honeywell Regulator Co.

W. F. Slook, production engineer, **B. R. Dorsey,** tooling inspector, and **H. H. Treese,** parts and assemblies inspector, have been appointed Fairchild representatives at Globe Aircraft Corp. on the C-82 project.

RYAN PRODUCTION ENGINEERING DEVELOPMENT NO. 28-30.18

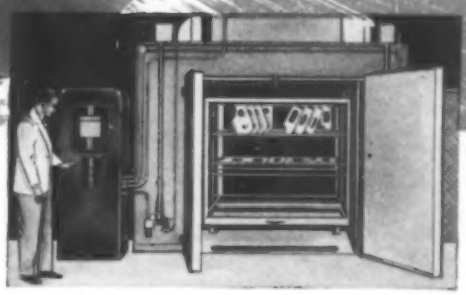
Faster, Lighter Aircraft, Greater Pay Loads through New Techniques in Processing Aluminum Alloys...

How to develop airplanes capable of carrying greater pay loads at higher speeds by reducing structural weight? That's the aeronautical engineer's basic problem.

To accomplish this end could a metal be found which had the lightness of Aluminum and the strength of steel? Yes, Aluminum alloys could be post-aged to give them this much desired strength. But, the process so reduced the corrosion resistance of the metal that full advantage could not be taken of this development.

Ryan metallurgists tackled the problem and came up with a procedure which yields a light corrosion-resistant alloy with the strength of low carbon steel.

Ryan engineers have been *first* to make full use of this weight-saving development in the design and construction of aircraft. This advantage, which adds to the deadliness of American warplanes, will be equally valuable to the peacetime planes of the future.



THE PROBLEM: How to take advantage of the extra strength imparted to Alclad 24-S by the post-aging process. The strength of this metal, composed of an Aluminum alloy covered with a thin deposit of pure Aluminum, may be increased by post-aging. However, this has always been accompanied by a loss in corrosion resistance which prevented aeronautical engineers from completely utilizing this advantage. The aging reduced the galvanic potential between the alloy and the clad Aluminum and removed the electrolytic protection it afforded.

THE SOLUTION: Ryan research found a way to obtain the strength increase and maintain high corrosion resistance: The Alclad is placed in an oven and held to a temperature of 365° F. for ten hours. This induces a copper precipitation and raises the tensile strength at least 20%. Then the corrosion resistance is restored by anodizing a thin layer of oxide on the surface and spraying it with a zinc chromate primer.

THE ADVANTAGES: By ordering specified stock, post-aging at carefully controlled temperatures and anodizing and priming, Ryan has created new possibilities for Aluminum alloys. The entire aircraft industry may now have the benefit which this metal, with Aluminum's lightness and steel's strength, gives to every designer and builder of airplanes.

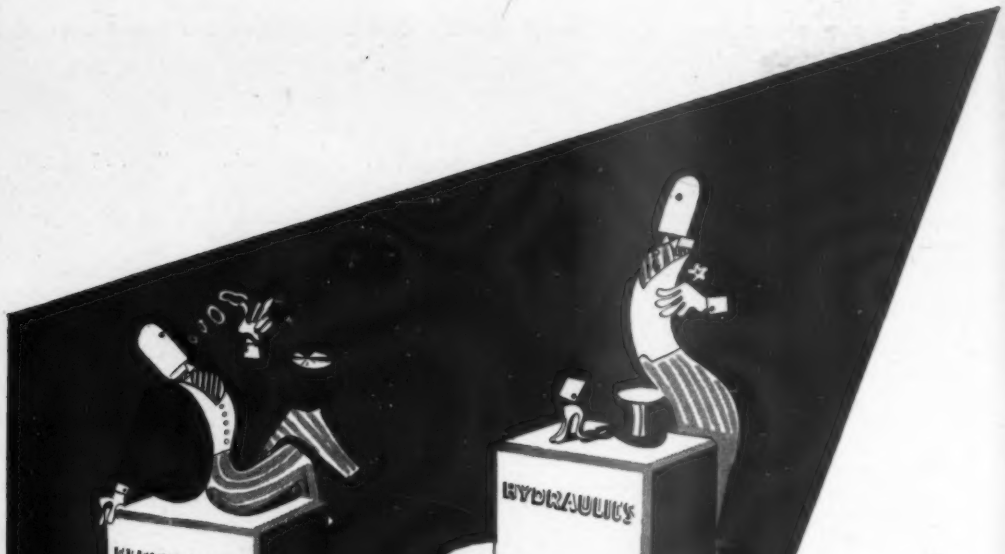
RELY ON RYAN TO BUILD WELL

1922-1945

RYAN *Airplanes*

Ryan Aeronautical Company, San Diego — Member, Aircraft War Production Council, Inc.

DESIGNERS AND BUILDERS OF NAVY FIGHTING PLANES AND EXHAUST MANIFOLD SYSTEMS



The cornerstones are ours . . .

WE'RE old hands at basic engineering. From the time we were small fry, it's been our practice to conduct our own research—lay our own cornerstones. It's a practice that's bred unusual engineering talent, led to the development of uncommonly good equipment. This inherent sense of responsibility is one reason why **Aireon** hydraulic and electronic equipment is widely used by the armed forces and many of the country's major airlines. And reason enough why **Aireon** has shown a steady growth over its eight years of operation. **Aireon** executives grew up in the aviation field; appreciate its possibilities, understand its future requirements. Our engineers are particularly well equipped to design what you want from the ground up; our plants to translate your postwar plans into finished products. Glad to talk it over whenever you say.

Aireon

MANUFACTURING CORPORATION

Formerly AIRCRAFT ACCESSORIES CORPORATION

Radio and Electronics • Engineered Power Controls

NEW YORK • CHICAGO • KANSAS CITY • BURBANK

DOWN THE Manufacturing LINE

R-1 Generators From Ford

Receipt of an Army Air Forces order for several thousand R-1 type generators is announced by the Ford Motor Co. The new generator turns out 300 amperes with a maximum speed of 8,000 revolutions per minute, and is used in B-24 Liberators and other combat planes. The new contract supplements former contracts calling for 10,000 of the R-1 units which have been in production at Ford's Ypsilanti plant since Jan. 1.

New Alloy for Jets

Creation of a new forgeable high temperature alloy steel for application in gas turbines and reaction engines has been revealed by Allegheny Ludlum Steel Corp. in its annual report to stockholders. Mention also was made of two somewhat similar alloys the company had created, one for use in aircraft engine valves and the other in aircraft turbo-superchargers.

Globe to Make C-82 Parts

Globe Aircraft Corp., Fort Worth, will be a major sub-contractor for the C-82 Packet. Globe is tooling up for the manufacture of 14 major assemblies including the main horizontal stabilizer, fuselage nose, wing tips, outboard and inboard ailerons, outboard and inboard flaps and stabilizer tips. Globe-built parts will be furnished to both Fairchild Airplane Division, Hagerstown, Md., and North American Aviation, Inc., Dallas.

B-32 Output Boosted

Rate of production of the B-32 Dominator has been stepped up and the production rate for the PB4Y-2 Privateer has been decreased 20 percent, Consolidated Vultee Aircraft Corp. has announced. The reduction in production rate of the PB4Y-2 has been made possible because combat losses have been lower than expected. It does not affect the total number of planes contracted for, but merely the rate at which they will be built.

Packard Plans Jet Research

Packard Motor Car Co. is preparing to include research in gas turbines and jet propulsion engines in its advanced aircraft engine develcpmental program undertaken at the request of the Air Technical Service Command, and is now combing the market for men to work on these projects. The program will be carried out with augmented facilities nearing completion at the Packard Toledo division and the Willow Run Army Air Base.

AIEE Forms 4 Sub-Committees

The American Institute of Electrical Engineers has set up four subcommittees of its Air Transportation Committee to carry on important assignments in connection with its standards work in the field of aeronautical electrical equipment. The Aircraft Electrical System Subcommittee, headed by R. H. Kaufmann, will prepare an informative type of report on "Fundamental Characteristics of Aircraft Electrical Systems". The Aircraft Electrical Control and Protective Devices Subcommittee, headed by R. A. Millermaster, will prepare electrical standards and test codes covering aircraft control and protective devices to aid in their rating, testing and evaluation. The Aircraft Wire and Cable Subcommittee, headed by W. S. Hay, will prepare electrical standards and test codes covering the rating, testing and application of aircraft wires and cables; and the Aircraft Electrical Rotating Machinery Subcommittee will prepare similar standards for electrical rotating machinery.

Convair Announces Plastic

A new plastic laminate which is claimed to be stronger and lighter than aluminum alloy has been announced by Consolidated Vultee Aircraft Corp., San Diego, Calif. Designated Conolite, it was developed by Dr. G. G. Havens and G. A. Gordon, Convair research engineers, and is being used to fabricate parts for Liberators and Dominators. It is made by impregnating Fiberglas or Fortisan fabric with a new type thermosetting resin, and is said to be resistant to salt water, benzene, aromatic fuels and acetone. It has high resistance to resonance, and actually tends to deaden vibration.

Costs Down on Packard—Roll's

Unit costs for Packard-built Rolls-Royce aircraft engines were reduced about 10% to the Government in 1944, the Packard Motor Car Co. discloses in its annual report to stockholders. The company earned net profits of $4,117,910, or 27.5 cents a share on 15,000,000 no par common shares in 1944 as against $4,754,587 or 31.7 cents a share on the same amount of stock outstanding in 1943. New production schedules approved by the Army Air Forces and Navy call for a volume of $350,000,000 in 1945 as against $455,692,753 in 1944.

Council Managers— Managers of the three Aircraft War Production Councils during recent weeks have been battling a number of major industry problems, including the draft situation which threatened to strip aircraft plants of a majority of young technical personnel. They have been successful in obtaining a greater measure of deferment for men in the 18-30 age group. Materials problems also have engaged the attention of this trio: left to right, Richard C. Palmer, manager of the National Council; Clyde M. Vandeburg, East Coast Council; and William F. Peters, West Coast Council.

75,000th Landing Gear

Completion and delivery of its 75,000th hydraulic airplane landing gear is announced by Menasco Manufacturing Co., Burbank, Cal. The company builds landing gear struts for Thunderbolts, Mustangs and Lightnings.

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Controllable Wing Plane Test Flown

An unusual personal plane which is controlled by a movable wing instead of the conventional rudder, ailerons and elevators, was test flown recently by the Stout Research Division of Consolidated Vultee Aircraft Corp. The new ship is now undergoing exhaustive tests, and it may take several more years of development before it can be expected to replace the conventional design, according to company officials.

The present controllable wing was designed by George Spratt, of the Convair engineering staff, and while it represents a revolutionary departure from current aircraft control practice, the idea antedates the Wright brothers' first flight. At that time it was advocated by Dr. George A. Spratt, father of the present designer, and it finally resulted in his parting company with the Wright brothers because they insisted on using ailerons and rudders to maneuver their plane.

Dr. Spratt refused to forsake the controllable wing principle, and in 1906 he built and flew a glider embodying it. George Spratt, Jr., carried on where his father left off, and in 1934 he was flying an early controllable wing model which resembled his father's glider much more than it did contemporary aircraft of that period.

The latest controllable wing model is a pusher cabin monoplane with an automobile type landing gear. The wing is mounted on a pedestal on top of the cabin and can be moved relative to the plane around two pivots so as to provide control. It has a span of 26 feet 6 inches.

Advantages claimed for the controllable wing are that it will bring greater safety and easier handling of small aircraft. When perfected, it may eliminate the necessity for ailerons, elevators and rudders entirely, and make the plane as easy to control as an auto or motor boat. Even in its present experimental status, it possesses some advantages if its designer's experience is any criterion. George Spratt has logged more than 100 hours with the controllable wing, and yet he cannot fly a conventional plane.

Use of the controllable wing even after further refinements will be limited to small aircraft, according to Convair officials, who point out that the pilot must move the mass of the wing with his own strength.

Wings That Move—Shown here are three stages in the development of Convair's new controllable wing plane on which the wing itself moves and the conventional control surfaces are eliminated. Top left, is the current experimental model which was test flown recently at Elizabeth City, N. C. Top right, is George Spratt, Convair designer, flying an early controllable wing model in 1934. Bottom foreground, is the world's first controllable wing aircraft, a glider built and flown by Dr. George A. Spratt, father of the present designer in 1906. Shown with the glider, left to right, are George Spratt, Jr., Dr. Spratt, Dr. Spratt's aid, and Mrs. Spratt.

New Thunderbolt Model

The War Department has revealed that a new model Thunderbolt, the P-47N, with a combat radius of more than 1,000 miles and a speed exceeding 450 miles per hour, has been developed by Republic Aviation Corp. and the Air Technical Service Command. The P-47N has a Pratt and Whitney R-2800 C-series engine which gives it an additional 100 horsepower for take-off. A larger, more efficient turbo-supercharger, the General Electric CH-5 is combined with the new engine to give greater speed at higher altitudes.

Convair Managers—Ernest Wenigmann, seated, explains a schedule to W. R. Lawrence, Jr., his successor as division manager of the Nashville plant of Consolidated Vultee Aircraft Corp. Wenigmann has been appointed division manager of Convair's Allentown, Pa., plant. Lawrence is former division manager of the Corporation's Tucson modification center.

Douglas Says Teamwork Won Plane Output Goal

"Teamwork" between Government, management and labor enabled the aircraft industry in a little more than 4½ years to build 300,000 planes at a cost of $40,000,000,000, Donald Douglas, president of Douglas Aircraft Co. and chairman of the board of governors of the Aeronautical Chamber of Commerce, told members of the Commonwealth Club of California recently.

Stating that the six Douglas plants in California, Oklahoma and Illnois last year delivered one-sixth of all the aircraft built in the United States, Douglas pleaded that nothing be permitted to disrupt this teamwork which was responsible for the achievements of the aircraft industry and urged that air power "can also be peace power for generations if the nation sees clearly and acts promptly in the reconversion period."

Boeing Facilities Enlarged

The Defense Plant Corp. has authorized increase in its contract with the Boeing Airplane Co., Wichita, to provide additional plant facilities at a cost of $350,000, resulting in an over-all commitment of $28,500,000.

There are plans in the air for you

Aeronca has plans you ought to know about. For instance, right now, undergoing wind-tunnel tests, is a model of a plane that can be flown by any member of the family, roomy enough to carry the *whole* family. It will be offered at a new low price for this type ship. It will have such automobile-like features as ball-bearing controls and even cushioned power to eliminate vibration.

Right now, the company is fulfilling war contracts. This war work has taught even Aeronca new tricks, and they've been in aviation for more than 16 years. War brings out the kind of engineering that means big things for peacetime private planes. In fact, Aeronca's the only light aircraft company to receive the Army and Navy "E"! And there are . . .

Other postwar plans! Aeronca realizes that thousands of postwar personal planes will need airports just as automobiles need roads. That's why the company has a plan that is starting thousands of small airports all over the country—operated by the men who own them. You'll probably want to know about both planes and plan. Use the coupon!

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Financial Reports

Douglas Nets $7,685,227

In its second consecutive, record-breaking year, Douglas Aircraft Co. built 180,000,000 pounds of planes and parts at the saving over the preceding year of 43 percent in manpower and 33 percent in costs to the Government.

With sales well over a billion dollars and net income for the fiscal year ending Nov. 30, 1944 of $7,685,227 or less than three-fourths of one percent of total sales volume, the company again delivered to the Government and its allies approximately one-sixth of all aircraft built in the United States.

In spite of the all-time peak of production and sales, dividends remained at the $5.00 a share level in effect for the past five years, or a total for 1944 of $3,000,000 on the 600,000 shares outstanding. In the same period $357,000,000 in wages and salaries were paid out to employes in plants and feeder shops at Santa Monica, Long Beach, El Segundo, Oklahoma City, Tulsa, and Chicago.

Expenditures for payrolls, materials, services and sub-contracting currently are running at the rate of $2,800,000 each working day.

The company's backlog on March 16, 1945 was approximately $2,000,000,000. Of this amount $129,000,000 is in commercial orders for postwar planes to be built as soon as military requirements and the Government permit, and if prices as stated in the contract can be met at the time of release.

The company's total tax bill for 1944 in direct Federal, state and local taxes was $40,825,000, he reported.

This was the equivalent of $68.04 per share of outstanding stock or over five times the net per-share earnings.

Although 1944 net income was larger than that for 1943, earnings before provision for contingencies of $2,715,000 were smaller than in the previous 12-month period.

The sales of $1,061,407,485 in 1944 established a new world record. In pounds of airframes and parts manufactured, Douglas in 1944 exceeded the 1943 figure by 60%. This was 38 times the 1939 volume.

Listing of current assets and liabilities disclosed net working capital of $49,673,670, as of November 30, 1944. The current ratio was 1.68 to 1, with cash and government securities of $31,701,467 available in addition to $20,034,500 of tax-savings notes held as partial appropriation against $28,949,964 of income tax liabilities.

Stockholders of record November 6, 1944 totaled 9,030. The average holding of each recorded shareholder was 66 shares.

Braniff Profit $773,985

Braniff Airways made a net profit of $773,985 for the year 1944, contrasted with adjusted net earnings of $542,024 for 1943. This represents an increase of 42.80%.

Revenues from all sources increased 29.10%; expenses increased 27.75%; the number of passengers carried increased 43.32% and revenue passenger miles flown in 1944 exceeded 1943 by 42.76%.

Braniff operated 95.50% of its scheduled revenue miles, carried an average of 17.54 revenue passengers per mile, and increased its scheduled daily mileage during the year from 12,740 to 18,722—an increase of 47%. The company carried 246,000 passengers for a total of 94,965,133 passenger miles during 1944.

Total current assets Dec. 31, 1944 were $7,080,250 compared to $6,858,248 for the same date in 1943. Current liabilities on corresponding dates were: $1,147,265 and $1,027,913. Capital stock was listed as 1,500,000 shares at $2.50 par value, with 1,000,000 shares issued and outstanding at a total par value of $2,500,000 both for 1944 and 1943. Paid-in surplus was given as $4,075,139 for both years with earned surplus listed at $536,117 for 1944 and $678,437 for 1943. Total capital and surplus for 1944 was $7,161,247 for 1944, $7,253,567 for 1943.

Total operating revenue for 1944 was $5,707,965 compared with $4,454,258 for 1943. Total operating expense for the same two years was $4,477,141 and $3,478,548 respectively. Balance at end of year was $586,117 after payment of cash dividend of $600,000 at the rate of 60c per share.

Stock Authorization Asked

Stockholders of Fairchild Engine and Airplane Corp., at an adjourned annual meeting April 30, will be asked to authorize 150,000 shares of preferred stock. Subject to such authorization, negotiations are in progress with Smith, Barney & Co. with a view to raising $4,000,000 to $5,000,000 of capital through the sale of an initial series of 80,000 to 100,000 of such shares. Public offering would follow shortly upon the effective date of a registration statement expected soon to be filed. The initial series would have a $2.50 dividend rate and would be convertible into common stock at a rate to be determined at about the time of offering.

Bendix Sales $869,662,826

Bendix Aviation Corp. reports consolidated net income after all operating costs and provisions for taxes, estimated provision for renegotiation, depreciation and contingencies, of $15,290,091, equal to $7.20 a share of capital stock, for the fiscal year ending Sept. 30, 1944. Net income the previous year was $14,722,704, or $6.95 a share. Consolidated gross sales in 1944 were $914,110,895 as against $918,753,465 in 1943. Net sales, after deducting refunds for retroactive price reductions, were $869,662,826, compared with $822,510,234 in 1943. Actual Physical volume of production increased substantially over the previous year, but the average level of delivery prices was considerably lower in 1944. Net income amounted to 1.76% of net sales, compared with 1.79% in 1943.

AA's Net Reaches New High

American Airlines announces net profit in 1944 reached a new high of $4,396,163 or $3.33 a share on 1,271,896 shares of common stock, compared with $3,192,969 or $5.18 a share on 574,848 shares of old $10 par common stock in 1943. Operating revenues increased from $31,451,430 in 1943 to $39,244,012.

Provision for federal taxes on income was $4,050,000 compared with $3,500,000 the pre-

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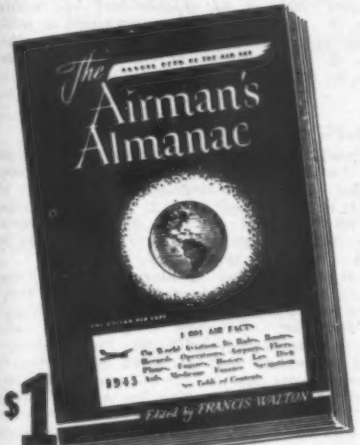

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vious year with the special reserve for transition to peacetime operations $1,500,000 compared with $1,750,000. Working capital gained $2,526,985 for a total of $19,067,123 and earned surplus was $10,376,858.

Revenue passenger miles flown totaled 572,094,112 compared with 435,913,741 in 1943. "The growth of the company's service is illustrated by the fact that American's non-military mileage in 1944 exceeded the peak of 1941 before the government requisitioned a large part of the airlines' equipment," A. N. Kemp, president of American, reported. Transatlantic flights last year average 10.6 daily.

Eastern Nets $2.54 per Share

Eastern Air Lines has reported a net profit of $1,490,337 or $2.54 per share after all Federal taxes in 1944 as against $1,426,859 or $2.42 per share in 1943. To date, Eastern is the only company in the industry which has paid an excess profits tax, and had the company been exempt from such tax in 1944, net earnings would have amounted to $5.77 per share.

Total revenues of $18,806,266 in 1944 represented a new peak in company history, and compared with total revenues of $16,012,460 in 1943. Operating expenses were up $2,271,328 to $13,106,929, but operating expenses per revenue mile decreased from $.8140 to $.7593.

Cash and government securities increased $1,838,878 to $18,404,967 and net working capital increased $1,398,741 to $14,947,272 as of Dec. 31, 1944. Total current assets as of that date amounted to $22,283,414 as against $19,722,522 the year previous, and total current liabilities increased from $6,173,990 to $7,336,141.

The company operated an average of 22.8% more planes per day in 1944 than in the year previous and carried 30.3% more revenue passengers and flew 30.4% more revenue miles. Plane utilization in 1944 was 13 hours and 32 minutes per airplane per day, 36 minutes better than 1943, and 4 hours and 13 minutes better than 1941.

United Aircraft Earnings $15,562,335

United Aircraft Corp. reports net earnings of $15,562,335 in 1944, equal after preferred dividends to $5.37 a common share, as against 1943 earnings of $15,396,114 or $5.36 a share. Sales in 1944 were $743,527,683 as against $733,590,668 the previous year. The net profit on sales rose to 1.7% from 1.6%. The corporation has received formal clearance from the Navy Price Adjustment Board that no excessive profits were made during 1944 and accordingly has been discharged of any liability under the Renegotiation Act for all years through 1944.

The corporation's reconversion reserves now total $32,475,408, of which $4,470,944 was added last year. The sum of $525,458 was added in 1944 to a reserve for write-off of excess expendable tools and supply inventories. This reserve now totals $2,726,761. Current assets as of Dec. 31, 1944, amounted to $182,675,716 including cash of $43,097,737, while current liabilities were listed at $88,675,366.

Pratt & Whitney Aircraft Corp. of Missouri, a subsidiary which is operated for the government without profit or loss to the company, had sales of aircraft engines totalling $90,000,000 in 1944.

Martin Reports $4,909,572 Income

A consolidated income of $4,909,572 after all charges and reserves, equal to $4.37 a share on 1,124,564 shares of stock outstanding is reported for 1944 by The Glenn L. Martin Co. This profit per share, still subject to renegotiation, compares with $2.68 per share after renegotiation in 1943.

Net sales for 1944 amounted to $533,400,444 as compared to $598,072,796 in 1943 after renegotiation. Two dividends of $1.50 per share were paid, in June and December, and $14,500,000 was added to the company's re-

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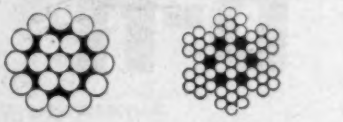

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serve contingency fund out of profits, bringing the total of this fund to $24,500,000. Federal and state income taxes amounted to $49,049,944. Materials and supplies inventories, which totalled $40,845,536 at the end of 1943, were reduced by 54.4% to $18,644,084 at the end of 1944.

C & S Earns $177,703

Chicago & Southern Air Lines earned $177,703 after taxes but before provision for military contract adjustments in 1944, according to its annual report to stockholders. This constitutes an increase of $49,647 over 1943 earnings of $128,055 despite a decline of $107,197 in revenue from Army contracts. Income from commercial operations before taxes increased from $30,868 in 1943 to $217,179 in 1944.

During the 12 months ending Dec. 31, 1944, Chicago and Southern flew 2,882,381 revenue miles. Operating revenue was $2,946,712 and was divided as follows: Passengers and excess baggage, $2,545,016; Mail, $281,807; Express, $107,245; Other $12,643. Total operating expenses were $2,729,533. Other income including fees and profits on Government contracts totalled $99,786, and total income, $316,965. Total income before provision for income taxes but after other deductions of $13,262 was $303,703. Provision for Federal and State income taxes totalled $126,000.

Liberty Nets $502,144

Liberty Aircraft Products Corp. reports a net profit of $502,144 for the fiscal year ending Nov. 30, 1944, after taxes, charges and preferred dividends. This is equal to $1.75 per common share. Total sales were $21,273,431.

Lockheed Net Drops to $4,452,848

Lockheed Aircraft Corp. reports a net income of $4,452,848, equal to $4.20 a share, for 1944 as against $7,988,420, equal to $7.42 a share for 1943. Total receipts from sales and other income were $603,363,664 compared with $669,152,490 in 1943. The company produced 14.23% more pounds of airframe in 1944 than the previous year despite a 20% drop in employment. Employment totals dropped from 81,961 in 1943 to 57,972 last year, but average hourly earnings have increased from 98c on Jan 1, 1942 to $1.26 on Jan. 1, 1945.

In his annual statement, Robert E. Gross, president, said that Army orders for the P-80 Shooting Star call for what is believed to be the largest production program in number of planes a month and the most rapid acceleration in output ever assigned to a single airframe manufacturer. The report said postwar planning had been postponed, but added: "While we have signed conditional agreements with many potential customers, it would be misleading to imply that the volume of such agreements received indicates a true backlog of postwar commercial business." It said such conditional agreements total in excess of $150,000,000.

Kellett Assets 3¼ Million

Kellett Aircraft Corp. balance sheet for 1944 showed assets and liabilities of $3,294,484. Current assets of $2,909,212 included Cash on hand and on deposit, $163,595; Accounts receivable from customers, $1,356,579; Misc. accounts receivable, $5,985; Inventories (work in progress $1,020,992) and (materials and supplies, $362,060) $1,383,052. Misc. assets of $162,536 included Estimated postwar refund of Federal excess profits tax, $156,702; Receivable from officers and employees, $3,334; Deposit for rent, $2,000; Misc., $500. Fixed assets were listed at $177,220, and Deferred charges at $45,514.

Current liabilities totalling $2,155,120 included: Notes payable, $820,000; Accounts payable including trade and deductions from employees' earnings for income and social security taxes, $361,226; Advance payments on U. S. contracts, $80,000; Estimated Federal and State taxes on income, $615,211; Other taxes, $65,255; Payrolls, including vacation accrual, $156,938; Misc. accrued accounts, $56,437. Reserve for postwar contingencies is $254,500; Issued common capital stock, $428,098; Paid-in surplus, $205,065; and Earned surplus, $251,700.

Convair 50 Cent Dividend

Directors of Consolidated Vultee Aircraft Corp. have declared a dividend of 50 cents a share on the common stock payable May 15, 1945 to stockholders of record May 4. The regular quarterly dividend of 31¼ cents a share was declared on the preferred stock payable June 1 to stockholders of record May 15. Stockholders have approved a purchase and option plan involving a reservation of 125,000 shares of common stock for sale to officers and employes.

Republic Nets $5,141,490

Republic Aviation Corp. reports net earnings for the year, after federal income and excess profits taxes, but before renegotiation, of $5,141,490, equivalent to $5.23 per share on the 982,406 shares of common stock outstanding. The 1944 earnings compare with $4,869,954 in 1943, equivalent to $4.95 per share.

Out of 1944 net earnings, $1,450,000 was appropriated to the reserve for postwar readjustments and contingencies, leaving a balance of $3,691,490, equivalent to $3.76 per share. Renegotiation proceedings for the company's 1943 operations resulted, after adjustment of excess profits tax, in a reduction in 1943 net profit of $1,231,025, calling for a cash refund to the government of $879,304 and a reduction of $351,721 in the postwar refund of excess profits tax. After provision for that refund to the government, the balance of 1944 net income added to earned surplus amounted to $2,812,186. Two cash dividends of $.25 per share paid during 1944 amounted to $491,201.

The company's balance sheet at the end of 1944 shows total earned surplus of $6,151,862. It also carries $3,942,279 (equivalent to $4.01 per share of common stock) as reserve for postwar readjustments and contingencies. Assets at the end of 1944 included an item of postwar refund of excess profits tax amounting to $3,327,279. Property account less depreciation amounted to $663,328. Total current assets, of which only $326,436 represented company owned inventories, amounted to $110,649,886. Total current liabilities amounted to $102,774,499. Net quick assets or working capital amounted to $7,875,307.

Aircraft Mechanics Nets $77,344

Aircraft Mechanics, Inc., Colorado Springs, Colo., reports net profits of $77,344 on net sales of $3,752,938 in 1944. Net profit before taxes was $294,674. Current assets Dec. 31 totalled $965,342, and current liabilities $831,894.

Piper Nets $293,391

A net profit before provision for contingencies of $293,391 was reported by Piper Aircraft Corp. for the fiscal year ending Sept. 30, 1944. Net sales were $10,646,171; gross profit from sales, $3,134,353; net operating profit, $2,194,020; and net profit before provision for taxes, $2,173,391.

The balance sheet as of Sept. 30 shows current assets of $3,411,815 and current liabilities of $2,649,828. Outstanding stock includes 13,884 shares of convertible preferred stock at $138,840, and 604,224 shares of common at $604,224. Surplus from operations is $786,254.

Hearing Affects Pan American

Securities and Exchange Commission has set April 19 as a hearing date on the application of the Boston Stock Exchange to extend unlisted trading privileges to Pan American Airways capital stock, $2.50 par value. The hearing will be held at the SEC offices, 82 Devonshire St., Boston.

"Control of the air" today means more than massed firepower and numerical dominance by aircraft; it means control of communication channels . . . and better detecting devices —better directional finders—better protective equipment. The air today is filled with high-frequency impulses, activated by radio and radar. And helping assure that supremacy are Delco Radio products, ranging from compact mobile radio sets in combat vehicles, planes and ships, to highly intricate electronic equipment. They represent the effective combination of engineering vision and manufacturing precision that safeguards the performance of all Delco Radio equipment, wherever it serves and whatever its purpose. Delco Radio Division, General Motors Corporation, Kokomo, Indiana.

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Advertisers In this Issue

Advertiser	Page
Aeronautical Products, Inc.	62
Aeronca Aircraft Corp.	91
Aeroquip Corp.	Third Cover
Adel Precision Products Corp.	Back Cover
Air Transport Assn. of America	63
Ai-Research Mfg. Co., Division of the Garrett Corp.	73
Aireon Mfg. Co.	88
American Export Airlines, Inc.	21
American Phenolic Corp.	65
Aviation Associates	95
B-H Aircraft Co.	95
Bell Aircraft Corp.	71
Bendix Aviation Corp., Bendix Products Division	37
Boots Aircraft Nut Corp.	85
Borg-Warner Corp.	14
Bowser, Inc.	83
Cal-Aero Technical Institute	59
Cox and Stevens Aircraft Corp.	92
Curtiss-Wright Corp., Airplane Division	30-A
Delco Radio Division, General Motors Corp.	97
Douglas Aircraft Company, Inc.	7
Engineering & Research Corp.	93
Evans Products	81
Farrar & Rinehart	95
Flightex Fabrics, Inc.	92
Foote Bros. Gear & Machine Corp.	57
General Controls Co.	80
B. F. Goodrich Co.	50-51
Gulf Oil Corp.	47
Hayes Industries, Inc.	5
Irving Air Chute Co., Inc.	4
Jack and Heintz, Inc.	32-33
Walter Kidde & Co., Inc.	6
Lear, Inc.	94
Lockheed Aircraft Corp.	35
Logan Engineering Co.	89
McDonnell Aircraft Corp.	2nd Cover
Macwhyte Co.	96
P. R. Mallory & Co., Inc.	67
Mid-Continent Airlines, Inc.	48
Owens-Corning Fiberglas Corp.	79
Pan American Airways, Inc.	3
Phillips Petroleum Co.	8
Pioneer Parachute Co.	30-B
R. C. A. Victor Division, Radio Corp. of America	44-45
Rohr Aircraft Corp.	39
Ryan Aeronautical Co.	87
Sikorsky Helicopter Division, United Aircraft Corp.	75
Southeastern Air Service, Inc.	55
Sperry Gyroscope Co.	40
Standard Oil Co. of New Jersey	25
Transcontinental & Western Air, Inc.	13
United Air Lines	11
United States Rubber Co.	22-A-B-C-D
The Weatherhead Co.	61
Western Air Lines, Inc.	53
Western Electric Co., Inc.	28-29
The White Motor Co.	77
Wilcox Electric Co.	69

Aviation Securities Over the Counter

(Courtesy Merrill Lynch, Pierce, Fenner and Beane)

	March 24 Bid	March 24 Ask	March 31 Bid	March 31 Ask
AIRLINES				
All American Aviation	8¾	9¼	8⅞	9⅛
American Airlines Pfd.	Called 1/15 at 106			
American Export Airlines	34½	6	40	42
Braniff	18½*	....	18¾*	....
Chicago & Southern com.	15½	⅞	15⅞	⅞
Chicago & Southern wts.	7¾	8½	7⅞	8⅛
Continental Airlines	13½	14¼	13	⅝
Delta Air	25	¾	25	⅞
Inland Airways	3⅞	4⅜	4	⅛
Mid-Continent	9½	⅞	9½	⅝
National Airlines	17⅛*	....	18*	....
Northeast Airlines	11½*	....	12⅜*	....
MANUFACTURERS				
Aeronca	4⅝	⅜	4½	⅝
Air Assoc.	12¾	....	12½	12⅝
Aircraft & Diesel	1⅝	2	1⅝	⅞
Aireon Mfg	6⅜	....	10⅝	11⅝
Airplane & Marine	6¾	7¼	6⅜	⅞
Airplane Mfg. & Supply	5	¼	4⅞	5¼
Central Airports	¾	....	¾	....
Columbia Aircraft	⅝	....	⅝	1
Continental Aviation	4¼	¾	4⅛	⅝
Delaware Aircraft Pfd.	No market		No market	
General Aviation Equipment	1⅛	⅜	1⅛	⅝
Globe Aircraft	1½	¾	1⅜	⅝
Harlow Aircraft	⅜	⅝	⅜	⅝
Harvill Corp. com.	1⅞	2⅛	1⅞	2⅛
Interstate Aircraft & Eng.	12	½	11¾	12⅝
Jacobs Aircraft	4½*	....	5	....
Kellett Aircraft	1¾	2	1¾	2
Kinner Motors	1¼	⅜	1.20	1.30
Liberty Aircraft	13⅜	¾	13¼	⅝
Luscombe	1⅜	¾	1¼	⅛
Menasco Mfg.	1⅝	⅞	1⅛	⅝
Northrop Aircraft com.	7½*	....	7⅞*	....
Piper Aircraft com.	3¾	4	3⅝	⅞
Piper Aircraft pfd.	36½	....	36½	....
Pitts Aviation Inc.	Final liquidation 76c at Farmers National Bank			
Rohr Aircraft	11	⅝	10⅞	11⅛
Std. Aircraft Prods.	½	....	½	....
Taylorcraft com.	2⅞	3¼	3	⅛
Taylorcraft pfd.	8	½	8	⅝
Timm	⅞	1	⅞	1
United Aircraft Prods. pfd.	19	20	19	20

* Sale

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